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Zoology of New-York, or the New-York Fauna comprising detailed description
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ZOOLOGY
OF
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OR THE
NEW-YORK FAUNA;

COMPRISING DETAILED DESCRIPTIONS OF ALL THE ANIMALS HITHERTO OBSERVED WITHIN THE
STATE OF NEW-YORK, WITH BRIEF NOTICES OF THOSE OCCASIONALLY FOUND NEAR
ITS BORDERS, AND ACCOMPANIED BY APPROPRIATE ILLUSTRATIONS.

BY JAMES E. DE KAY.

PART III.
REPTILES AND AMPHIBIA.

ALBANY:
PRINTED BY W. & A. WHITE & J. VISSCHER.
.....
1842.

ZOOLOGY

NEW-YORK

OF THE

NEW-YORK LUNA

Bayerische
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MÜNCHEN

BY JAMES E. DE KAY

PART III

REPTILES AND AMPHIBIA

1827

PRINTED AT N. & A. WHITE & A. S. S. S. S.

1827

The copy right of this work is secured for the benefit of the People of the State of New-York.

SAMUEL YOUNG,

Secretary of State.

Albany, 1842.

The copy right of this work is secured by the laws of the State of New York.

SAMUEL JOHNSON

Secretary of State

1800

PREFACE.

So general is the repugnance of mankind to the animals composing these classes, that their study has been overlooked, and they have usually been considered as beings which it was not only necessary but meritorious to destroy. A part of this vulgar prejudice is derived from education, and perhaps some of it may originate from the fact that several of them are furnished with venomous fangs, capable of causing intolerable sufferings and death. To the naturalist and physiologist, however; to those who study nature through her various modifications of form and structure, they present some of the most interesting objects of contemplation. Their utility, either in diminishing various noxious animals, or in furnishing food themselves to others, has been lost sight of; and because they were cold to the touch, with a naked slimy skin without hair or feathers, they have been considered as loathsome and hideous, although their structure displays as much of the omnipotence and care of the Creator as can be seen in those which are considered to be the most gorgeous and beautiful of his animated beings.

The number of known Reptiles and Amphibia throughout the world has been variously estimated. It seems to be considered by some writers to reach to 1,300 species, whilst others suppose that 1,500 would scarcely comprise them all. As the greater number inhabit the torrid zone, we are not to expect to find many in the United States. In this work we have enumerated one hundred and sixty-one species, and have described and figured sixty-three species as found in the State of New-York; but we suppose the list to be far from being exhausted, more particularly among the Amphibians.

Descriptions of a few species may be found in the writings of Kalm, Schoepff, Bosc, Palisot de Beauvois and Daudin; but these are often confused and contradictory, and drawn up from altered cabinet specimens. In many cases, animals

not even belonging to this continent have been attributed to New-York, simply because they were sent by a collector from that place. Thus the *Homolopsis carinicauda* of Brazil, and the *Platydictylus milberti*, a species probably existing west of the Cape of Good Hope, have been described as belonging to this State. Often writers, in describing the *Cyclura harlani*, an animal probably from tropical America, state they have reason to believe that it is common in New-York. But it is chiefly to the labors of American naturalists that we are indebted for our knowledge of the Reptiles and Amphibians of the United States.

Mr. Say has given us descriptions of several new Serpents and Tortoises; Dr. Green first investigated the numerous family of Salamanders; and Major Le Conte has described several new Tortoises and Frogs, and elucidated the previous doubtful or obscure species of the older writers. To Dr. Harlan we are indebted for almost all the knowledge which we possess in relation to those remarkable families among the Amphibians, which were for a long period known under the name of doubtful reptiles.

Dr. Holbrook, in his excellent and beautifully illustrated work, entitled North American Herpetology, has enlarged our acquaintance with every department among these classes, and his volumes will long remain a monument of his genius and his zeal. Dr. Holbrook has recently remodelled this work; and at the moment that these pages are passing through the press, is engaged in publishing a second edition, in five quarto volumes, with many important additions. To his kindness I am indebted for the privilege of being permitted to examine most of what has already been printed, and it has suggested many valuable improvements in the present volume.

To Major Le Conte, I have to express my thanks for his assistance in the course of this work, which owes several of its illustrations to his pencil. Dr. Emmons, of the Geological Survey, has also afforded me valuable aid in obtaining some species which might otherwise have escaped my observation.

J. E. DE KAY.

THE LOCUSTS, QUEENS COUNTY.

January 1, 1842.

LIST

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SYNOPSIS

OF THE

GENERA OF THE REPTILES AND AMPHIBIANS OBSERVED IN THE STATE OF NEW-YORK.

REPTILIA:		
ORDERS.	FAMILIES.	GENERA.
CHELONIA, -----	Chelonidæ, -----	{ Chelonia. Sphargis. Trionyx. Chelonura: Emys. Kinosternon. Sternotherus. Cistuda.
SAURIA, -----	{ Scincidæ, ----- Agamidæ, -----	{ Scincus. Tropidolepis. Coluber. Tropidonotus.
OPHIDIA, -----	{ Coluberidæ, ----- Crotalidæ, -----	{ Leptophis. Calamaria. Heterodon. Trigonocephalus. Crotalus.

AMPHIBIA.	
Ranidæ, -----	{ Rana. Scaphiopus. Bufo. Hylodes. Hyla.
Salamandridæ, -----	{ Salamandra. Triton.
Sirenidæ, -----	Menobanchus.
Amphiumidæ, -----	Menopoma.

SYNOPSIS

OF THE

GENERA OF THE REPTILES AND AMPHIBIANS OBSERVED IN THE
STATE OF NEW-YORK.

REPTILIA.

Order	Family	Genus
Serpentes	Colubridae	Coluber
		Lias
		Agkistrodon
		Phrynosoma
		Phrynosoma
	Batrachoseps	Batrachoseps
		Batrachoseps
	Geophili	Geophila
		Geophila
		Geophila
Batrachia	Salamanders	Salamander
		Salamander
		Salamander
		Salamander
		Salamander
	Toads	Toad
		Toad
		Toad
		Toad
		Toad

AMPHIBIA.

Lissamphibia	Frogs	Frog
		Frog
		Frog
		Frog
		Frog
Anura	Toads	Toad
		Toad
		Toad
		Toad
		Toad

THE NEW-YORK FAUNA.

CLASS III. REPTILES.

VERTEBRATED ANIMALS, RESPIRING BY LUNGS, WITH RED AND COLD BLOOD. HEART TRILOCULAR, OR COMPOSED OF TWO AURICLES AND A SINGLE VENTRICLE. EXTREMITIES VARYING IN NUMBER, OR ENTIRELY WANTING. BODY COVERED WITH HORNY OR CARTILAGINOUS PLATES, OR WITH HARD SCALES. REPRODUCTION BY A PREVIOUSLY FECUNDATED EGG, WHICH IS HATCHED AFTER LEAVING THE BODY, OR IN ITS PASSAGE FROM THE PARENT. UNDERGO NO STRUCTURAL METAMORPHOSIS IN THE COURSE OF THEIR GROWTH. TERRESTRIAL OR AQUATIC. HIBERNATE IN TEMPERATE REGIONS. CARNIVOROUS FOR THE MOST PART. NUMEROUS IN THE TORRID ZONE. SOME ARE POISONOUS.

Obs. We have deviated from the arrangement of Cuvier, who united together in one class animals which he had himself demonstrated to be very different in their organization. In separating his order Batrachia from the Reptiles, we follow the path which he has indicated, and shall point out briefly the most important characteristics which distinguish these two allied classes. In adopting this course, we are supported by the authority of eminent herpetologists.

ORDER I. TESTUDINATA.

This is at once recognized by the bony or cartilaginous covering above and beneath; leaving the head, neck, limbs and tail free. Feet four. Jaws toothless. The vertebrae of the neck and tail only, visible.

Obs. This order, which may be described as having its skeleton external, is very natural and precise. It has, however, obscure affinities through Chelonura with the following order.

It contains about one hundred and thirty species distributed throughout the globe, and has been divided into several families by various systematists. It is susceptible of division into two principal groups, which may be thus designated :

1. *Apalodermata*. Outer shell coriaceous or cartilaginous ;
2. *Sclerodermata*. Shell hard and bony.

We recognize but one family.

FAMILY CHELONIDÆ.

Body covered by two bony or cartilaginous plates, the one above formed by an expansion of the vertebræ and ribs ; the other, by a similar expansion of the sternum, which, in some genera, is divided into several movable pieces. Jaws with cutting edges, but no true teeth. Feet with 2 - 5 claws, sometimes wanting, occasionally fin-shaped.

Obs. The animals of this family are carnivorous or herbivorous. They are strictly oviparous ; hiding their eggs in sand, and leaving them to be hatched by the heat of the sun. Some are exclusively aquatic ; others exclusively terrestrial ; whilst others appear to live equally on land or in the water.

Thirty-five species, arranged under nine genera, have been described by authentic writers as inhabiting the United States and its territories. In this State, we describe eighteen species.

GENUS CHELONIA.

Feet fin-shaped, elongate, depressed, not retractile, beneath the shell. Shell covered with horny plates. Aquatic ; living in the ocean. Some of the species useful as food to man ; others employed in the arts.

THE GREEN TURTLE.*

CHELONIA MYDAS.

Testudo mydas. L. Syst. Nat.

T. viridis. SCHNEID. Schild. pl. 17, fig. 2.

Green Turtle. CATESBY, Car. Vol. 2, p. 38. AUD. Orn. Biog. Vol. 2, p. 370.

Tortue franche. DAUD. Hist. Rept. Vol. 2, p. 10, pl. 16, fig. 1. Griffith's Cuv. Vol. 9, p. 15 and 88.

Chelonia mydas. HOLBROOK, N. Am. Herpetology, Vol. 2, p. 25, pl. 3.

Characteristics. Shell sub-cordate, pointed behind. Scales either carinate or imbricate. Two claws on each foot. Length 2 - 6 feet.

* The word *turtle*, originally corrupted from *tortoise*, has now grown into such general use, as its equivalent, that it would seem pedantic to avoid employing it. By *Turtle*, we would more especially designate the *Marine Tortoises*, although by usage it is applied to a few others.

Description. Shell smooth, slightly keeled in the centre; composed of thirteen plates, viz. five vertical plates which are hexagonal, and four lateral plates on each side. Marginal plates twenty-seven; the anterior broader than long; the posterior pointed behind, and the last two emarginate. Sternum convex, composed of six pair, with three supplementary ones on each side. Head elongated, compressed at the sides. Fore feet in the shape of fins, longer than those behind. Two nails, flat, 0.75 long, on the anterior edge of each fore foot; two similar but shorter nails on the posterior feet. Tail very short, conical.

Color. A dull greenish, inclining to olive brown.

Length,	23.0.	Transverse diameter,	20.0.
Fore leg,	13.0.	Hind leg,	10.0.

The above notes were made from an individual which came on shore near my residence, September, 1840, on the northern coast of Long Island. It is certain that this species is a native of the tropical seas, and of course such an occurrence must be considered as purely accidental. In reference to the geographical distribution of animals, the enumeration of this species as an inhabitant of the waters of the coast of New-York would lead us into error, by enlarging unnecessarily its ordinary geographical limits. In preparing, however, a work designed to illustrate the Fauna of this State, and for the instruction of the student who may accidentally meet with other specimens, we have deemed it useful to insert this brief notice. My friend Mr. I. Cozzens, a well known practical naturalist and excellent observer, informs me that he has, on several occasions, seen them in the New-York Market, which had been captured off Sandy Hook, and near Coney Island.

The Green Turtle is well known to the epicure for its delicious steaks, and the savory soup which it affords. Along the coast of Florida, it approaches the shores in the early part of summer, and deposits its eggs in a hole scraped in the sand, where they are hatched by the heat of the sun in the course of two or three weeks.

(EXTRA-LIMITAL.)

C. caretta. Hawksbill Turtle. (HOLBROOK, Vol. 2, pl. 4.) Orbicular; carinated above. Head very large; when young, the nose elongated. *Gulf of Mexico.*

C. imbricata. Tortoise-shell Turtle. (HOLBROOK, Vol. 2, pl. 5.) Subcordate; scales imbricate, yellow rayed and spotted with brown. *Gulf of Mexico.*

GENUS SPHARGIS. *Merrem.*

Body covered above by a leathery skin instead of scales. The ribs not soldered together, and not united to the almost membranous sternum by the marginal plates. This covering is tubercular in the young, but elevated into distinct ridges in the adult. Feet fin-shaped, without nails.

Obs. This genus was first indicated by Merrem. The names of *Corindo*, *Dermochelis* and *Dermatochelys* have been successively proposed by Fleming, De Blainville and Wagler.

THE LEATHER TURTLE.

SPHARGIS CORIACEA.

(PLATE V. FIG. 9.)

Testudo coriacea. LIN. 12 ed. p. 350.

Tortue luth. DAUD. Hist. Rept. Vol. 2, p. 62, pl. 18, fig. 1.

T. coriacea. MITCHILL, Med. Rep. New Series, 1812, p. 191, and 1813, figure.

Sphargis id. GRIFFITH, Cuv. Vol. 9, p. 17, and 88 plate. GRAY, Synops. p. 20.

S. id. BONAP. Faun. Ital. figure. (Young.)

S. id. STORER. Mass. Rep. p. 217, plate 4. HOLBROOK, N. Am. Herp. Vol. 2, p. 45, pl. 6.

Characteristics. Shell with seven longitudinal ridges, truncated in front, pointed behind. Length 6 – 8 feet.

Description. Upper surface smooth and polished, of a leathery appearance, truncate, emarginate in front, with a rather elongated process on the sides of the neck, obtusely pointed behind. Surface of the shield divided into separate oblong compartments by seven equidistant longitudinal ridges, which are obsoletely nodulous, becoming more indistinct behind: The first runs along the dorsal ridge; the next on each side commencing in advance of the dorsal ridge, and approaches it behind; the third pair on each side begins posterior to the first; the last ridge is formed by the margin of the shell. These ridges are acute, slightly interrupted on the edge. Beneath, smooth, of a somewhat softer consistence. Head smooth, compressed nearly to an edge anterior to the eyes. Jaws sharp, the upper emarginate in front to receive the acute hooked point of the lower jaw; on each side of the central notch is another, not quite as deep, and more rounded. Strong spinous processes in the roof of the mouth, and in the œsophagus. Nostrils small, circular, and placed behind the tip of the snout. Eyes large, opening obliquely. Anterior feet smooth, elongated, ending in a blunt point, and twice the length of the posterior pair. Posterior feet rounded, or rather obliquely truncated behind, with a softer margin. Tail pyramidal, compressed laterally, pointed, and extending beyond the shell.

Color, of the head and buckler, dull blackish brown, and in the fresh state with a bluish tinge. Extremities obsoletely spotted with greyish. The under parts marbled with blackish, on a yellowish or soiled whitish ground.

Total length,..... 70·0.
 Ditto of the shield,..... 68·0.

The young of this species presents strong and numerous variations from the adult. The skin, instead of being smooth, is roughened with tubercles. The ridges are composed of a series of rounded tubercles. The head is larger in proportion; the pupil vertical, and the sternum with five longitudinal ridges.

This gigantic species, which breeds on the Tortugas or Turtle islands, and on the Bahama islands and keys, visits our coast sufficiently often to entitle it to a place in our Fauna. It was first noticed on our coast in 1811, and described and figured by Dr. Mitchill. In 1816, another individual of a large size was captured off Sandy Hook, and is now in the American Museum of New-York, set up in a very false and grotesque manner. A third species was taken in 1824, in Massachusetts Bay, and is described in the Report cited above by Dr. Storer. A fourth specimen was taken September 7, 1826, in Long Island Sound; and another in 1840, in Chesapeake Bay.

The Leather Turtle, although a native of tropical American seas, is a great wanderer: it has been seen on the coast of England, and in the Mediterranean. We are not in possession of sufficient evidence to determine whether the large leather turtle seen in the Pacific and Indian oceans belong to this species. The food of our turtle is said to consist of fish, shells and marine plants.

Lesueur is said to have described another species? under the name of *Dermochelis atlantica*; but I have been unable to find the description.

GENUS TRIONYX. Geoffroy.

Shell without scales, and, together with the sternum, cartilaginous, and extending over the edges into a flexible margin. Feet palmated, with three sharp claws. A corneous beak, covered with fleshy lips. Nose produced. Vent near the extremity of the tail.

Obs. The coverings of the animals of this genus are even softer and more pliable than the preceding. The expanded ribs which form the upper shell do not extend to the margin, and the under portion is equally undeveloped. They all live in fresh-water streams, and have the reputation of being exceedingly voracious.

THE SOFT-SHELLED TURTLE.

TRIONYX FEROX.

PLATE VI. FIG. 11. YOUNG. — (CABINET OF THE LYCEUM.)

Testudo ferox et cartilaginea. GMELIN, Syst. Nat.*The Soft-shelled Tortoise*. GARDEN, Phil. Transac. 1771, p. 226.*River Tortoise*. PENN. Arct. Zoology, Supplement, p. 78.*La Tortue de Pennant*. DAUDIN, Hist. Rept. Vol. 2, p. 68, pl. 18, fig. 2.*Trionyx spiniferus*. LESUEUR, Mem. Mus. Vol. 15, p. 258, pl. 6, a, b, c.*T. ferox*. SAY, Ac. Sc. Vol. 4, p. 218. LE CONTE, Ann. Lyc. Vol. 3, p. 93. HARLAN, Med. and Phys. p. 158.*T. platypeltis*. FITZING.*T. amyda*. SCHWEIGG.*Trionyx ferox*. HOLBROOK, Am. Herpetology, Vol. 2, p. 11, pl. 1.*T. ferox*. KIRTLAND, Report on the Zoology of Ohio.

Characteristics. Dusky brown. Orbicular; little elevated; the anterior margin with cuticular processes. Fore feet with three squamous folds in front, and two oblong tubercles behind. Young, with ocellate spots. Length 9 - 12 inches.

Description. Shell entire, orbicular, bony in the central parts, and cartilaginous on the margins. The anterior margin in the adult with numerous pointed tubercles, which may be faintly and distantly traced in the young. A series of raised and tuberculated lines on the disk in the adult. Under a lens, the surface of the shell appears divided into minute compartments, in which there are two concentric rings, including a small rounded central elevation; these are barely sensible to the touch. Sternum cruciform, osseous in the middle. Head large, tapering acutely to the nose, which is long and flexible, with the nostrils nearly terminal. Eyes prominent, contiguous, and almost vertical. Mouth cleft behind the eyes; jaws narrow, partly covered by the lips, which are thickened on the sides. Neck long, smooth, with a gular fold. Legs long and slender, palmate, five-toed; the web extending over the two clawless toes on both feet, and high up along the posterior margin of the hind foot. Tail short, thick, suddenly contracting to a point, and extending beyond the shell. Vent within 0.5 of the extremity of the tail. Claws robust, subtrigonal, nearly straight, the intermediate one on the hind foot longest.

Color. Shell dark slate, with numerous large ocellate spots, and with black dots chiefly along the margin. Beneath, soiled white. Head slate, punctate with black on the summit and sides. Nose light, or flesh-colored; a white stripe, margined on each side with black, proceeds from the posterior margin of the eyes, and is lost in the marblings on each side of the neck. Chin and sides of the lower jaw, together with the feet and tail, varied with black and white. Irides yellow, with a black medial stripe.

Total length,	9.0.	Length of shell,	5.3.
Ditto of head and neck,	3.0.	Diameter of shell,	5.0.
Ditto of tail,	1.7.	Height of same,	1.4.

The Soft-shelled Tortoise was not generally known as an inhabitant of New-York, until after the completion of the Erie canal, connecting the Great Lakes with the Ocean. Previous to that period, it was supposed to belong exclusively to the southern and western waters. The description given above was taken several years since, from a specimen obtained in the Mohawk river. Subsequently, several individuals, as I understand, have been taken from the Hudson river near Albany. The specimen, as I then thought, varied so much from any description of the *ferox* within my reach, that I considered it to be new, and named it *ocellatus*. An examination of many specimens, both of *ferox* and *muticus*, (which I suspect to be identical,) since that period, together with a recent reëxamination of the specimens in the Cabinet of the Lyceum, satisfies me that my *ocellatus* was nothing but the young of the *ferox*, the *première variété* of Lesueur (Op. sup. cit. p. 261). It is, however, so peculiar, that I deemed it worthy of being drawn. The color of the adult is of a uniform dusky brown, occasionally with a few obsolete darker spots.

I am not acquainted with any other locality in this State, though I have heard of their being taken in Chautauque and Cayuga lakes. I have been assured by persons in Cattaraugus county, that they have been taken in the Allegany river, a tributary of the Ohio. Major Le Conte informs me that they are abundant both in Lake Ontario and Erie. Dr. Kirtland mentions this species as very abundant in all the streams both of the Ohio and Lake Erie. In calm weather, during summer, he observes, great numbers may be seen floating near the surface of the water. At such times, they were closely followed by several of the black bass (*C. ohioensis*); but he could not ascertain what attracted this usually coy fish about them.

It is much esteemed as a wholesome and nutritious article of food. They are said to feed on fish, and the smaller aquatic reptiles. The statements regarding their ferocity, which has given them their specific name, appear to vary. According to Mr. Speakman cited by Say, it is only the young who attempt to bite; and Major Le Conte observes, that they are not more inclined to bite than any other species. Dr. Eights, on the other hand, asserts that he saw "a large one from Cayuga lake dart out its head ferociously at a dog which had been purposely brought near, and take from its side a mouthful of hair in the attempt." They are chiefly taken with a hook baited with flesh, and sometimes speared. When they show themselves above water, they are killed by the rifle.

(EXTRA-LIMITAL.)

T. muticus. (LES. Mem. Mus. Vol. 15, pl. 7. HOLB. Vol. 2, pl. 3.) Shell elliptical, confounded with the neck, not tuberculated or spinous in front. Sternal callosities four; the two hinder large, united. Length 7 to 8 inches. *Ohio River*.

T. bartrami. (LE CONTE, Ann. Lyc. Vol. 3, p. 96.) Head and neck furnished with retractile tuberculated appendages. *East Florida*.

T. harlani. (BELL, Monog.) Body more ventricose, and the soft portions of the shell less extensive than in the other species. *East Florida*.

GENUS CHELONURA. *Fleming.*

Head large, with small plates. Both jaws strongly hooked. Sternum small, cruciform, immovable. Tail long, and furnished with a scaly or tuberculated crest. Anterior feet with five claws; posterior with four.

OBS. This genus is identical with the *Emysaurus* of Dumeril & Bibron, *Rapara* of Gray, and *Sauvichelys* of Latreille. The *Chelydra* of Schweigger appears to have been founded on the young of the *C. serpentina*. I am acquainted with but one species in the United States. Dr. Harlan, in his Medical and Physical Researches, has indicated the existence of another from Tennessee, but has given no detailed description.

THE SNAPPING TURTLE.

CHELONURA SERPENTINA.

PLATE III. FIG. 6. YOUNG.

Testudo serpentina. L. Syst. p. 354.

T. id. DAUDIN, Vol. 2, p. 98, pl. 20, fig. 2.

Chelonura serpentina. SAY, Acad. Nat. Sc. Vol. 4, p. 217.

Chelydra lacertina. SCHWEIGG. Monog. (Young.)

Testudo serpentina. LE C. ANN. Lyc. Nat. Hist. N. Y. Vol. 3, p. 127.

Emys (Chelydra) serpentina. GRAY, Synopsis Rept. apud Griff. Cuv. Vol. 9, p. 14.

Chelydra serpentina. HARL. Med. & Phys. p. 157.

Emysaurus id. DUMERIL & BIB. Vol. 2, p. 350.

Emysaurus id. STORER, Mass. Rep. p. 212.

Chelonura id. HOLBROOK, Am. Herp. Vol. 4, p. 21, pl. 3; and Vol. 1, p. 139, pl. 23, of the 2d Ed.

Characteristics. Shell oval, more or less carinate, three-toothed on its posterior margin. Upper jaw hooked, acute. Head long and wide. Snout attenuated. Length 2 - 4 feet.

Description. Shell oval, little elevated, with a dorsal ridge produced by the elevation of the posterior margin of the vertebral plates. Five vertebral, eight lateral and twenty-five marginal plates. The first lateral plate triangular, with its outer base rounded; the remainder sub-quadrate, the posterior smallest. The marginal plates small, oblong, and gradually enlarging on the sides; the posterior largest, and of these, three and occasionally four with strong spinous angles. The vertebral plates are quadrate, except the last, which is pentagonal. Sternum composed of ten plates; the anterior pair small, the two following pair gradually larger. The wing or supplementary plates long and narrow, united to the marginal plates by two small plates; these wing plates are attached beneath to the pectoral and femoral pair. Caudal plates long, narrow and triangular. Head exceedingly large, scaly above. Skin of the neck loose, and thickly covered above with fleshy warts, somewhat smoother beneath. Jaws stout, the upper jaw largest. Legs robust. Fore feet covered above by series of scales, of which those on the posterior edge are largest. Hind legs with similar large scales beneath. Toes

partially webbed; those of the fore feet almost entirely so. The claws are robust, channelled beneath, moderately curved. Tail very long, cylindrical at the base, slightly compressed on the sides, and tapering to an acute tip; its dorsal surface crested by numerous compressed elevated scales, becoming smaller behind; a series of large flat scales on the sides.

Young. The lateral plates form a prominent ridge on each side, becoming more elevated behind, and separated from the dorsal ridge by a broad and deep furrow. All the plates of the shell strongly marked with elevated lines radiating forwards, with slight concentric furrows. In the adult, these are obsolete. The supplementary or wing plates are united to the margin by three small plates.

Color. Dusky brown or olivaceous green above. The sternum, under side of the marginal plates, and of the neck, feet and tail, bright yellow, which becomes dull with age. Eyes brown. In a specimen from Lake Janet, Hamilton county, the under sides of the marginal plates were of a beautiful light green.

Total length, 12·0 – 48·0.

Ditto of tail, 4·0 – 16·0.

This is one of our largest turtles. It is common in every part of the State, and inhabits equally the clearest and muddiest streams. It is occasionally met with at a distance from the water, probably in search of food, or of a suitable place of deposit for its eggs. On the Raquet river, Franklin county, I found them laying their eggs in June, and we were frequently indebted to these deposits for a precarious meal. They scoop out a hole in the sand a short distance from the water, a few inches deep; and by probing with a short stick in places indicated by the tracks of the animal, we frequently obtained as many as sixty or seventy eggs from one spot. The eggs, as well as the animal, afford a very nutritious and savory food. The larger and older animals have a strong musky flavor, which renders them unpalatable. They feed upon frogs and fishes, and snap greedily at ducks in ponds, dragging them under water to be devoured at leisure. It is this propensity to snap at every thing within its reach, which has obtained for it its popular name. In other sections, it is known under the names of *Loggerhead*, *Alligator Turtle* and *Couta*. I have frequently observed a small leech (*Clepsina scabra*) adhering to it.

This species appears to extend over the whole Union, but its precise geographical limits are not yet ascertained.

(EXTRA-LIMITAL.)

C. temmincki, (HOLB. Vol. 1, pl. 24.) Head enormously large, covered above and on the sides with plates. Upper jaw hooked in front; lower jaw with a strong tooth-like process received in a cavity in the upper jaw. Shell tricarinate, concave in front, deeply emarginate and dentate behind; marginal plates 31, placed in two rows at the flanks. Tail not crested. Length of head and neck 12 inches; of shell, 22 inches; tail, 14·0. *Mississippi*.

GENUS EMYS. *Brongniart.*

Shell not much elevated, solid, covered with horny plates. Sternum solid, broad, immovable; of six pair and four supplemental plates. Feet palmate; anterior with five claws, posterior with four.

This genus comprises nearly all the fresh water tortoises discovered in America. In this State, we enumerate nine species.

THE SALT-WATER TERRAPIN.

EMYS PALUSTRIS.

PLATE III. FIG. 5. — (STATE COLLECTION.)

Testudo palustris. LIN. GMEL.

Tortue à lignes concentriques. DAUD. Hist. Nat. Rep. Vol. 2, p. 153.

Emys centrata. SAY, Acad. Sc. Nat. Philad. Vol. 4, p. 211. HARL. Med. and Phys. p. 153.

T. palustris. LE CONTE, Annals of the Lyc. Nat. Hist. Vol. 3, p. 113.

Characteristics. Shell oval, obtusely carinate; the plates with numerous deeply impressed concentric striæ; the last vertebral plate rounded in front. Beneath, reddish or orange, dusky, irregular stripes or rings. Length 5 – 7 inches.

Description. Shell emarginate behind, depressed, but the extent of this depression varies in different individuals; occasionally quite elevated, and as if distinctly carinated along the vertebral plates. Each plate is very distinctly marked, particularly in the males, by five to seven or eight regularly concentric lines, parallel with the direction of the sides of the plate: varieties occur, in which the plates are nearly smooth. The first vertebral plate quadrate, the remainder six sided; the last polygonal, the anterior margins forming nearly a curved line. Lateral plates, the three first pentagonal; the last small, subquadrate. Marginal plates twenty-five, unequal in size; the intermediate small, oblong, linear, the outer edge occasionally emarginate, sometimes triangular, truncate; the posterior plates small, somewhat upturned. Sternum of six pair; the gular plates small, triangular, with impressed concentric angular lines; the next pair larger, subquadrate, enlarged on the outer margin; the three following subequal, the caudal pair rounded behind, where they form a broad emargination. Extremities with separate scales.

Color. Usually of a dull ash brown above, varying in intensity in different individuals, sometimes approaching to black. Beneath, reddish or orange, occasionally pale and dull yellowish, with dusky dashes and rings on the sternal plates and lower side of the marginal plates. Head, neck and extremities dull bluish ash, with numerous spots of black.

Length, 5.0 – 7.0.
Height, 1.0 – 2.5.

This species is the well known and justly prized Terrapin of epicures. It is well distinguished as the Salt-water Terrapin, for it is found exclusively in salt or brackish streams near the seashore. They bury themselves in the mud during the winter, from which they are taken in great numbers, and are then very fat.

The geographical limits of this species extend from the Gulf of Mexico, along the Atlantic, to New-York. They are found along the northern shores of Long Island to its extremity, but I am not informed whether it occurs on the opposite main shore. Dr. Storer does not mention it in his valuable Report on the Reptiles of Massachusetts. The Prince of Canino has introduced this species into Italy, but I have not learned with what success.

THE SMOOTH TERRAPIN.

EMYS TERRAPIN.

PLATE XXIII. FIG. 63. — FIG. 65. POSTERIOR VERTEBRAL PLATE. — (STATE COLLECTION.)

Testudo terrapin. SCHCEPFF, Hist. Testud. p. 64, pl. 15.

La Tortue à lignes concentriques, variété 3me. DAUD. Hist. Rept. Vol. 2, p. 157.

Emys concentrica. GRAY, Synopsis apud Griff. p. 11.

Emys terrapin. HOLBROOK, N. Am. Herpetology, Vol. 2, p. 13, pl. 2, (excl. syn.) Ed. 1ma; Vol. 1, p. 87, pl. 12, Ed. 2da.

Characteristics. Shell smooth, not sculptured with concentric marks; posterior vertebral plate regularly pentagonal. Length 5.0 – 7.0.

Description. In the skull, the occipital process is more slender and longer than in the preceding. No striking differences are observable in the shell, except that it is never so much carinated as in the preceding species, and it has only a few concentric striæ on the lateral plates; the last vertebral plate distinctly pentagonal.

Color. Shell grey, with black concentric marks on each plate. Skin grey, speckled, and spotted with black.

I am indebted to Major Le Conte for a figure and note, pointing out the distinctive marks between this and the preceding species, which had been confounded by Daudin, and not contradistinguished by subsequent observers. They are both brought to our markets at the same time, and sold under the common name of *terrapin*. The specimens of the two species of the same size, examined by Major Le Conte, were both females. I had noticed the two, and supposed them to be sexual varieties. The market people say that they are caught in the same localities; but as Schœpff derived his specimens (the present species) from Muhlenberg, I am inclined to believe that the *T. terrapin* inhabits indifferently fresh and salt water. Schœpff himself found one on Long Island, in water which was almost fresh.

The figure and description of the *Emys terrapin* of my friend Dr. Holbrook, clearly point out this species. His specimens are obscurely carinate on the vertebral line, and he is entirely silent respecting the deep concentric marks which distinguish the other species. According to Holbrook, this species occurs as far east as Rhode-Island.

THE PAINTED TORTOISE.

EMYS PICTA.

PLATE V. FIG. 10. — (STATE COLLECTION.)

- Testudo picta*. GM. SCHNEID. Schildkrof. p. 348.
T. id. SCHÖEFF, Hist. Test. p. 23, pl. 4. (Adult.)
T. cinerea. ID. pl. 3. fig. 3. (Young.)
Tortue peinte. DAUD. Hist. Rept. Vol. 2, p. 164.
E. picta. SAY, Ac. Sc. Vol. 4, p. 211. LE CONTE, Ann. Lyc. Vol. 3, p. 115.
E. id. HARLAN, Med. & Phys. p. 151.
E. bellii. GRAY, Synops. p. 12.
E. picta et bellii. DUMER. & BIB. Hist. Rep. Vol. 2, p. 297 and 302.
E. picta. HOLBROOK, N. Am. Herp. Vol. 2, p. 19, pl. 3. STORER, Mass. Rep. p. 208.
E. id. ID. N. Am. Herp. Ed. 2da, Vol. 1, p. 75, pl. 10.

Characteristics. Shell oblong, oval, smooth; olive, with a yellow stripe along the sutures. Head with yellow lines along the sides. Neck and feet with red stripes. Length 5 - 9 inches.

Description. Shell oblong, oval, not carinated, smooth, minutely notched behind. First vertebral plate with projecting acute lateral angles in front, rounded or sinuous behind; the two following irregularly quadrate; the third having a small projection forward on its anterior margin; the fourth hexagonal, with sinuous sides; the last obscurely hexagonal. Of the lateral plates, the first is irregularly four-sided, the margin contiguous to the second vertebral plate shortest; the second is by far the largest, and the posterior smallest. The intermediate marginal plate linear, often doubly notched or bidentate in front; the first and second pair, together with the eighth and ninth on each side, largest. Sternum solid, elliptical, oval, finely serrate in front, the medial line often irregular; scapular plates triangular, with a slight knob-like process at the exterior angles, which project beyond the margin; pectoral plates narrow. Head moderate; upper jaw notched, with a slight process on each side of the emargination. Feet palmate, with five slender, acute and nearly straight claws in front, and four behind. Tail short, scaly, cylindrical. Independent of the sutures indicated externally on the shell by the markings, there are others concealed by the scaly epidermis.

Color. This varies exceedingly in different individuals, but the following is the most usual distribution: Shell olive brown or blackish, with irregularly dilated yellow lines, bordered with black along the suture. A very narrow yellow dorsal line from the margin of the intermediate plate, to the space between the two posterior marginal plates. The upper surfaces of the marginal plates with parallel vertical yellow lines, or else with concentric lines of the same color; occasionally these lines become abbreviated, disconnected, and sometimes small orbicular yellow or reddish spots margined with black; the under side of these plates yellow or reddish, with rounded or sub-quadrate dark spots. Sternum yellow or deep orange; all the plates towards the medial line with irregular concentric approximated dusky lines; these lines becoming occasionally confluent, and extending irregularly along the sutures toward the

outer margins, form a dark blotch, with a few lighter spots within. Neck, feet and tail black, more or less distinctly striped with red intermixed with yellowish. Sides of the head striped with yellow, and with four yellow blotches above. Eyes small; pupil black, with golden irides, and a black stripe running horizontally through their centres.

Total length, 5.0 - 6.5.

Height, 2.0.

For the variety and beauty of its markings, this is unquestionably the handsomest of our fresh-water species. It is a timid, inoffensive animal, and dies in a few days when kept out of the water. It feeds on insects and the smaller aquatic reptiles, and also eats the leaves of the *Alisma plantago*, or water plantain. It is found in every part of the State, and next to the *guttata* or Spotted Tortoise, is the most common, preferring tranquil ponds of water to clear running streams. Although occasionally eaten, it is not much esteemed. It ranges from Canada to Georgia along the coast, and has been observed near Lake Superior. It is enumerated by Kirtland among the Reptiles of Ohio.

THE SPOTTED TORTOISE.

EMYS GUTTATA.

PLATE VI. FIG. 12.—(STATE COLLECTION.)

Testudo guttata. SCHNEID. Naturforsch. Vol. 4, p. 264.

T. punctata. SCHÖEFF, p. 25, pl. 5.

T. punctata. LE CONTE, Ann. Lyc. Vol. 3, p. 117. SAY, Ac. Sc. Vol. 4, p. 212. HARLAN, Med. and Phys. p. 151.

Clemys punctata. WAGLER, Nat. Syst. der Amph. p. 137.

Emys guttata. HOLBROOK, N. Am. Herp. Vol. 2, p. 25, pl. 4; Vol. 1, p. 81, pl. 11, Ed. 2da.

E. guttata. DUM. & BIB. Hist. Rep. Vol. 2, p. 295. STORER, Mass. Rep. Vol. 1, p. 295.

Characteristics. Black, with rounded distant dots above; varied with black and yellow beneath.

Length 3 - 4 inches.

Description. Shell ovate, (in the young, narrowed before, and widely emarginate in front;) slightly emarginate behind; higher behind than in front. First vertebral plate pentagonal, the following hexagonal, the last seven-sided, all subequal. Of the four lateral plates on each side, the anterior is irregularly quadrate, the others pentagonal. Marginal plates twenty-five; the anterior impar, small, linear; (in the young, broader;) the others sub-quadrate; the fourth, fifth, sixth and seventh on each side smallest, and more vertical. The sutures are accompanied with deep concentric furrows, which in the adult become nearly or completely effaced. Sternum emarginate behind; the anterior pair triangular, with the external angle projecting beyond the margin; the next pair irregularly triangular, and larger; the two following pair oblong; the femoral pair enlarged on their outer margins; caudal pair trapezoidal. The junction of the sternum with the shell occurs with the fourth to the seventh marginal pair inclusive. All the sternal plates have angular concentric lines near the sutures. Head mode-

rate, depressed above; upper jaw emarginate. Legs scaly. Fore feet with five slightly incurved, brownish or black claws, channelled beneath. Of the four hind claws, the one next to the interior is longest. Tail pyramidal, pointed, with a slight prominence along the dorsal line.

Young. The plates of the sternum and shell with deeply impressed concentric angular lines, covering each plate. Upper surface, when moistened, deep shining black; the yellow dots confined to the marginal plates, of which there is one on each. Sternum and under sides of the marginal plates rosaceous, or flesh-colored.

Color. Black or deep brownish black, with distant rounded yellow dots, occasionally with a few orange spots. Head with two or more reddish spots above. Chin and neck dark brown, with irregular reddish spots. Feet dark-colored, reddish within. Sternum yellow horn-color, with dusky brown nearly covering each plate. Marginal plates yellowish beneath. Tail black above, reddish about the region of the vent.

Length of the shell, 4.0 - 5.0.

Ditto of the tail, 1.0 - 1.3.

This is one of our most common tortoises, and offers great varieties in the distribution of its spots. Most generally the lateral plates have but a single spot on each. They vary also exceedingly in the convexity of the shell. Under the name of *Speckled Turtle*, this little animal is found throughout the Union. It inhabits streams and ponds, giving a preference to such as have a deep muddy bottom. On a warm day, they may be seen on a log or rock, closely huddled together, and basking in the sun; from this they slip suddenly into the water, on the approach of man. They feed on insects, frogs and worms; and bury themselves, on the approach of winter, in the mud at the bottom of ponds. It is rare in the Western States.

THE WOOD TERRAPIN.

EMYS INSCULPTA.

PLATE IV. FIG. 8. — (CABINET OF THE LYCEUM.)

Emys scabra. SAY, Acad. Nat. Sc. Philad. Vol. 4, p. 210.

Terrapena scabra. BONAP. OSS. p. 157.

Testudo insculpta. LE CONTE, Ann. Lyc. N. Y. Vol. 3, p. 112. HARLAN, Med. and Phys. p. 152.

Emys pulchella. DUM. and BIBB. Hist. Nat. des Rept. Vol. 2, p. 251.

Wood Tortoise. STORER, Mass. Report, p. 209.

E. insculpta. HOLBROOK, N. Am. Herpetology, Vol. 3, p. 17, pl. 2; and Vol. 1, p. 87, pl. 13 of 2nd Ed.

Characteristics. Shell carinate, deeply furrowed by concentric and radiating lines. Plates of the sternum black at the angle formed by their exterior and posterior angles; emarginate behind. Length 8 - 10 inches.

Description. Shell oval, emarginate behind, depressed on the back, with a distinct carina, more prominent on the anterior and posterior vertebral plate. The surface of all the plates

deeply sculptured by radiating and concentric lines, the latter somewhat waved, which gives to the whole surface a minutely reticulated aspect. The first vertebral plate pentagonal, smooth on the centre of its posterior margin; the others sub-pentagonal. The first lateral plate four-sided, the internal margin short; the centre of the posterior margin of the last occasionally elevated. Marginal plates twenty-five; the intermediate one linear, prominent, often projecting; the next obscurely pentagonal, projecting at the external angle, the second dilated along the outer margin. The outer edges of the fourth, fifth, sixth and seventh plates slightly upturned; the largest are the ninth, tenth and eleventh, with their posterior angles slightly projecting. Sternum of twelve plates widely and deeply notched behind, depressed in the centre, and with obsolete angular concentric striæ on the sides towards the medial line. Scapular plates with a slight acute tip at the outer angles, projecting a little beyond the margin, as does likewise the femoral beyond the caudal; the humeral and abdominal plates united to the marginal, without any intermediate plates. Head moderate, flattened above; upper jaw emarginate, robust, the lower hooked. Neck rather long. Legs robust, scaly; feet palmate, the anterior with five and the posterior with four very stout claws. Tail short, large at the base, cylindrical, scaly, tapering, sub-compressed to an acute tip.

Color, of the whole shell, brown, tinged with reddish, and with radiating, abbreviated yellow lines; edges of the marginal plates horn-color. Sternum and under side, the marginal plates yellow, with black blotches near their posterior and lateral margins. Under portions of the neck, feet and tail, red, speckled with black; often a yellow line on each side of the neck. Eyes with a black pupil and brown irides, surrounded by a yellow ring.

Total length, 11·0.

Length of the tail, ... 1·6.

Length of the shell, .. 6·5.

Height of the shell, .. 2·7.

This is not one of the largest dimensions. Mr. Say speaks of one of which the shell was nine inches long, and I have heard of another which measured twelve inches.

We are indebted to Major Le Conte for the first elimination of this species. It is not so exclusively aquatic as most of its congeners, for it is frequently met with in woods at some distance from the water: hence one of its popular names. It is also called the *Fresh-water Terrapin*, to distinguish it from the *E. palustris* before described, and which it is thought to resemble in flavor. It is a northern species, extending from near Canada to Pennsylvania. I observed it along the banks of the Raquet and Saranac rivers, in the northern part of the State. In one specimen 8·0 long, the caudal plates were serrated on their posterior margin by the extension of the deep angular impressed lines; the lateral plates were hollowed in their centres; neck furnished with warts; color dark greenish, with interrupted radiating yellow lines; throat and lower side of the legs bright orange. In another, found on a sand beach of Cedar river, one of the sources of the Hudson, with a shell 8·5 long, it was more convex, although the vertebral plates were more depressed, and the keel nearly effaced; the sutures were wide, and the plates elevated at the sutures. It is a harmless species; but when irritated, it will snap repeatedly at the offender. Little is known of its habits.

THE RED-BELLIED TERRAPIN.

EMYS RUBRIVENTRIS.

PLATE VII. FIG. 14. — (STATE COLLECTION.)

Emys serrata. SAY, Acad. Nat. Sciences, Vol. 4, p. 208 (excl. syn.) HARLAN, Ac. Sc. Vol. 4, p. 204.*Testudo rubriventris*. LE CONTE, Ann. Lyc. Nat. Hist. Vol. 3, p. 101. HARLAN, Med. and Phys. Res. p. 154.*E. irrigata*. BELL, Gray's Synops. Rept. p. 29.*E. id.* DUMERIL et BIB. Hist. Nat. Rep. Vol. 2, p. 276.*E. rubriventris*. HOLBROOK, N. Am. Herpetology, Vol. 2, p. 37, pl. 6; and Vol. 1, p. 55, pl. 6, of Ed. 2da.

Characteristics. Very large. Shell oblong, gibbous, ecarinate. Intermediate plate linear, often serrate. Shell wrinkled along the side. Jaws serrated. Beneath red. Length 10 – 17 inches.

Description. Shell oblong, elliptical, restricted, opposite to the abdominal plates, emarginate behind; the sides with longitudinal wrinkles, which extend over the posterior marginal plates. The first vertebral plate obscurely six-sided, shorter than the others; the three following, oblong, the anterior margin of the first of these concave, the next nearly straight, the succeeding one convex, the lateral angles of all acutely pointed; the posterior plate narrow in front, its lateral margins wide, its posterior margins subdivided into four concave surfaces. The lateral plates very large; the posterior plate smallest, quadrate. Marginal plates twenty-five; the intermediate often serrate, the next slightly projecting; the eighth, ninth, tenth and eleventh also projecting at their external posterior angles. Sternum smooth, of twelve plates, emarginate behind. Scapular plates projecting; occasionally a small supplementary plate between the external angle of this and the following pair. Pectorals narrow, and united to the third, fourth and fifth marginal plate by an accessory plate. Abdominal pair large, and united by a triangular accessory plate at its posterior margin, to the seventh and eighth marginal pairs. Femoral plates project beyond the succeeding pair. Posterior angles of the caudal pair rounded. Upper jaw emarginate, and receiving the middle tooth of the under jaw. Legs and tail scaly, the former with robust claws.

Color. Dusky, with reddish confluent spots, and broad reddish lines. Sternum often of a uniform lake red; the under side of the marginal plates of the same color, with large dusky splashes or spots. Head dark brown or black, and with the throat striped with reddish or yellow. Eyes yellow, with a horizontal broad and black stripe through the middle. Legs and tail dusky, spotted, and occasionally striped with red.

This is one of the largest of the genus, and the neighborhood of the city of New-York appears to be its extreme northern limit. I have never seen it in the western parts of the State, and it appears to be unknown in Ohio. They are brought to our markets from New-Jersey, where they are very numerous in running streams. As an article of food, they are equally prized with the preceding. It is not found farther south than Virginia, and with its western limits I am unacquainted. It may be well to note, that in cabinet specimens, its rich coloring almost entirely disappears, and the brilliant red sternum is changed to a wax yellow. Its history is yet incomplete.

MUHLENBERG'S TORTOISE.

EMYS MUHLENBERGII.

PLATE VIII. FIG. 15. — (STATE COLLECTION.)

Testudo punctata, var. SCHCEPFF, Hist. Testud. p. 132, pl. 31.*Chersine muhlenbergii*. MERREM, Syst. p. 30.*Clemmys?* WAGLER, p. 136.*Emys biguttata*. SAY, Acad. Nat. Sc. Vol. 4, p. 205.*Terrapene*. BONAP.*T. muhlenbergii*. LE CONTE, Ann. Lyc. Nat. Hist. Vol. 3, p. 119.*E. id.* HARLAN, Medical and Physical Researches, p. 152.*E. id.* HOLBROOK, N. Am. Herpetology, Vol. 1, pl. 5; and Vol. 1, p. 45, pl. 4, of Ed. 2da.

Characteristics. Shell elevated, carinate. Neck with one or more orange spots on the side.
Length 4 inches.

Description. Head moderate, depressed above; upper jaw deeply notched, the lower with an acute tip. Membrane of the neck rugose, with unequal papillæ and a large fold. Fore feet scaly; the five toes divided from the claws nearly to their bases. Claws subequal, the external and internal being somewhat shorter. Hind legs longer than those before, with four toes, and one obsolete on the inner side. Tail sub-triangular, with about fourteen pair of sub-caudal plates. Shell elevated, carinate, dilated behind, narrowed in the middle; anterior margin scolloped, the posterior emarginate. The intermediate marginal plate sub-linear and very small, projecting slightly beyond its neighbors; the four next on each side nearly horizontal; the three following more vertical, and the remainder horizontal, the most posterior declivous. First vertebral plate pentagonal, the three next hexagonal, the fifth irregularly four-sided, the remainder pentagonal. All the scales with concentric angular striæ and corresponding ridges, except on the middle marginal plates, where they become almost obsolete; in old individuals, they become partially or entirely obliterated. Sternum emarginate behind. Scapular plates triangular, with their external angles projecting and rounded within, as shown on the plate above referred to. The remaining plates sub-quadrate; abdominal largest; femoral with its posterior angle projecting beyond the caudal, which is rhomboidal; all have concentric striæ.

Color. Head dark-colored above, with darker dashes and crimson dots on the cheeks. Irides brown. Chin and sides of the jaw with bright red streaks and spots. Two large irregular orange or yellow spots, often confluent, on each side of the back part of the head. Inside of the feet and under side of the tail, red; this is also the predominant color of the exterior parts, but it is of a darker hue. Shell dark brown, with irregular sub-radiating lines of a dingy yellow. Sternum blackish, with yellow or flesh-color along the medial line. Claws of a dark horn-color.

Length of shell, 3.5.

Height, 1.8.

Length of the head and neck from the intermediate plate, .. 1.4.

It is with hesitation that I refer this rare species to the present genus. It is decidedly terrestrial in its habits; preferring, however, moist places, and the neighborhood of running streams. The foregoing description was made from a living specimen presented to me by Mr. J. W. Hill, who obtained two of them from a meadow near Clarkstown, Rockland county, in the early part of May. Their movements, unlike most of the genus, are very sluggish; and in captivity, they attempt to burrow. Its hitherto known geographic range is very restricted, being limited to New-Jersey and the eastern part of Pennsylvania: it may now be extended to the State of New-York.

THE GEOGRAPHIC TORTOISE.

EMYS GEOGRAPHICA.

PLATE IV. FIG. 7. — (STATE COLLECTION.)

Testudo geographica et geometrica. LES. Mem. Mus. Vol. 15, p. 267.

Testudo geographica. ID. Acad. Nat. Sc. Philad. Vol. 1, p. 87, fig. 5.

Testudo id. LE CONTE, Ann. Lyc. Vol. 3, p. 108. HARLAN, Med. and Phys. Res. p. 152.

Testudo id. HOLBROOK, N. Am. Herp. Vol. 4; and Vol. 1, p. 99, pl. 14 of Ed. 2da.

Characteristics. Head very large. Shell not elevated, smooth, ecarinate, serrated behind, with irregular meandering yellow lines. Feet and tail striped with yellow. Head with yellow stripes, but no spots. Length six inches.

Description. Shell oval, smooth, widely emarginate in front, more narrowly notched behind. The vertebral plates scarcely approach a carinate form: The first, hexagonal, rounded in front, with a slight central elevation continued along the intermediate marginal plate; the three following larger, subequal, hexagonal. The two intermediate lateral plates largest, pentagonal; the posterior rhomboidal. Marginal plates twenty-five; the three first on each side continuous with the direction of the vertebral and lateral plates; the three following restricted, with their outer margins turned upwards; the seventh and eighth largest; the four remaining ones on each side two-toothed on the outer margins, the bidentation becoming gradually more distinct to the last. Sternum deeply notched behind; the scapular plates small, triangular, with a small projection at the outer angle, directed forward; brachial plates, triangular; femoral and caudal pair subquadrate. Head large, more than twice the size of the succeeding species; jaws acute. Legs rather long, scaly; feet palmate, well adapted for swimming. A series of rather large flat scales on the upper margin of the fore legs, which are furnished with five long, sharp, incurved claws. A broad palmation on the hind feet, posterior to the outer claw, margined with flat scales. Tail short, pointed, cylindrical at the base, compressed towards the tip.

Color. Shell olive brown, with paler narrow meandering lines intersecting each other. Marginal plates beneath, and the processes of the pectoral and abdominal plates, yellowish, with broad, brownish, concentric striae. Sternum yellowish, with brownish variegations. Upper part of the head, feet and tail, brownish black. Head and neck striped with yellow,

occasionally with orange or red; these stripes are irregular, waved, confluent. Chin and throat dusky, with irregular yellowish longitudinal lines in a double series. The under sides of the legs yellowish, with similar duplicated lines above, dusky with narrow yellow stripes. Tail with narrow yellow longitudinal stripes. Eyes yellow, with a horizontal black stripe.

Total length,.....	10·5.	Height of shell,.....	3·0.
Ditto of shell,.....	6·5.	Breadth,	5·0.
Ditto of tail,	1·3.		

This species, which is not uncommon in the counties of Chautauque and Erie, in the streams falling into the great lake, is more abundant in the western waters. I have never tasted their flesh, but am assured that it is very palatable. They are exceedingly active and vigorous. Until recently separated by Dr. Holbrook, two species have been confounded under one name.

THE PSEUDO-GEOGRAPHIC TORTOISE.

EMYS PSEUDOGEOGRAPHICA.

PLATE II. FIG. 3.—(CABINET OF THE LYCEUM.)

- Testudo geographica*, Var. b. LES. Mem. Mus. Vol. 15, p. 268.
Emys geographica. SAY, Acad. Nat. Sc. Philad. Vol. 4, p. 210.
Emys id. Var. a. LE CONTE, Ann. Lyc. Nat. Hist. N. Y. Vol. 3, p. 110.
E. lesueuri? GRAY, Synop. Rept. p. 12, apud Griffith.
Emys pseudogeographica. HOLBROOK, N. Am. Herp. Vol. 1, p. 103, pl. 15.

Characteristics. Shell elevated, carinate. Head moderate, with yellow stripes and large confluent blotches. Size of the preceding.

Description. Shell much more elevated than in the preceding species. First vertebral plate smallest, elevated in the middle, somewhat pentagonal; the following three six-sided, and the last three-sided. A prominent dark-colored tubercle on the central line of the posterior vertebral plate, projecting backwards, and almost imbricated over the next succeeding plate; these tubercles are largest on the second and third plates, becoming effaced on the last. The other plates of the shell present nothing distinctive. Sternum oblong, elliptic, of six pair, and widely emarginate behind: The anterior or scapular pair small, triangular, with a small tubercular process at the outer angle; brachial plates truncate, triangular; abdominal plates largest, and united by lateral processes and an intermediate plate to the fifth, sixth and seventh marginal plates; femoral plates four-sided, the posterior angle projecting beyond the lateral margins of the caudal pair.

Color. Very much like the preceding, both in its general color and the distribution of its markings. Edge of the marginal plates yellow. Sternum of a uniform yellowish color. Head with numerous yellow lines, frequently forming one or more large rounded spots on the sides of the head.

Length, 5·0 – 7·0.

I have never met with this species in this State, but am assured by Major Le Conte that he has seen it in Lake Erie, from which it is reasonable to suppose that it occurs in this State. The specimen affording the above description, was one sent to the Lyceum by Mr. Schoolcraft, from the Sault St. Marie, several years ago.

(EXTRA-LIMITAL.)

- E. floridana*. (HOLBROOK, Vol. 2, p. 47, pl. 8; and Vol. 1, pl. 8 of 2d Ed.) Shell gibbous, entire, ecarinate, very large, roughened longitudinally. Brown, with numerous dashes of dusky. Length of shell 15 inches. *Florida*.
- E. reticulata*. (HOLBROOK, Vol. 2, pl. 7; and Vol. 1, pl. 7 of 2d Ed.) Gibbous, ecarinate, entire, rugose longitudinally. Dark brown yellow lines, and a dorsal yellow line; neck very long; feet striped with yellow. Length of shell 9 inches. *Carolina, Georgia*.
- E. serrata*. (Id. Vol. 2, pl. 5; and Vol. 1, pl. 7 of 2d Ed.) Gibbous, carinate, almost round, longitudinally rugose. Dusky, with irregular yellowish lines; a large yellow spot on the cheek. The five posterior marginal plates deeply serrate behind. Length 12 inches. *Virginia, Georgia*.
- E. concinna*. (Id. Vol. 1, pl. 19.) Smooth, ecarinate, emarginate behind. Dusky brown, with confluent yellow spots and lines, more or less reticulated; legs and neck striped with yellow; a bifurcate stripe on the sides of the head. Length 8 inches. *Georgia, Carolina*.
- E. mobilensis*. (Id. Vol. 2, pl. 9; and Vol. 1, pl. 9 of 2d Ed.) Large, oval, convex and entire in front, emarginate and sub-serrate behind. Jaws serrate; inferior with a hook. Brown, with largely reticulated yellow lines. Shell 15 inches. *Alabama*.
- E. oregonensis*. (HARLAN, Am. Jour. Vol. 31, pl. 31. HOLBROOK, Vol. 1, pl. 16.) Shell ecarinate, olive, with irregular bright yellow lines margined with black; anterior marginal plates serrated in front. Length 8 inches. *Columbia River*.
- E. hieroglyphica*. (HOLBROOK, Vol. 1, pl. 2; pl. 17 of Ed. 2.) Shell ecarinate, smooth, elongate and imperfectly serrate behind. Sternum emarginate behind. Upper jaw slightly notched; lower with a tooth. Shell dusky, with broad sub-concentric yellow lines. Claws very long. Length 12 inches. *Tennessee*.
- E. megacephala*. (Id. Vol. 1, pl. 3.) Shell carinate, serrate and acute behind. Sternum oblong, emarginate. Head very large; jaws entire. Shell dark olive green; sternum dingy yellow; head and neck with greenish yellow stripes. Length 8 inches. *Tennessee, Ohio*.
- E. troosti*. (Id. Vol. 1, pl. 4; Vol. 1, pl. 20 of Ed. 2.) Shell depressed, ecarinate, slightly serrate behind. Head long and narrow. Upper jaw notched; lower jaw with a toothlike process. Shell dark green; sternum yellow, with a large black blotch near the centre of each plate. Length 8 inches. *Tennessee*.
- E. cumberlandensis*. (Id. Vol. 1, pl. 18.) Head moderate; upper jaw slightly emarginate; lower with a small hook in front. Shell rather rounded, indistinctly carinate, slightly notched in front, and serrated behind. Shell brown, with radiating yellow lines. Length of shell 8 inches. *Tennessee*.

GENUS KINOSTERNON. *Spir.*

Head sub-quadrangular, pyramidal, covered with a single plate. Jaws slightly hooked. Warts at the chin. Marginal plates twenty-three. Sternum subdivided into three sections; the anterior and posterior movable, the central fixed. Plates of the sternum eleven. Supplemental plates very large. Tail moderate or long.

THE MUD TORTOISE.

KINOSTERNON PENNSYLVANICUM.

PLATE II. FIG. 4. — (CABINET OF THE LYCEUM.)

Testudo pensylvanica. EDWARDS, Gleanings, pl. 287. PENN. Arct. Zool. Suppl. p. 80.

La Tortue rougeâtre. DAUD. Vol. 2, p. 182, pl. 24, fig. 1, 2.

Cistuda pensylvanica. SAY, Ac. Sc. Vol. 4, p. 206. LE CONTE, Ann. Lyc. Vol. 3, p. 120.

Kinosternon id. BELL, Zoological Journal, Vol. 2, p. 304.

Emys id. HARLAN, Med. and Phys. Researches, p. 155.

Kinosternon pensylvanicum. HOLBROOK, N. Am. Herpet. Vol. 2, p. 23, pl. 3; and Vol. 1, p. 127, pl. 21 of 2d Ed.

Cinosternon. WAGL. Bonap. Chel. Tab. analytica, p. 7.

Characteristics. Dusky brown. Shell vaulted. Upper and lower jaw hooked. The penultimate marginal plate on each side, dilated. Tail with a horny point. Length four inches.

Description. Shell oval, smooth, elevated behind, flattened above, descending rapidly behind, where it is minutely emarginate; the surface is covered with numerous obsolete angularly concentric furrows. First vertebral plate triangular, with a truncate apex behind; the second, third and fourth, hexagonal; the third smallest: all sub-imbricate behind. Lateral plates large, imbricate. Marginal plates elevated above the plane of the lateral plates, and separated from them by a deep furrow as far as the tenth pair, which, together with the eleventh, is continuous with the plane of the lateral and vertebral plates, and much higher than the others; the intermediate plate small, linear, dilated beneath. The sternum of eleven plates, somewhat concave, notched behind, with a joint at the pectoral plates, and another joint more or less obvious at the posterior margin of the abdominal plates. Gular plates united into one, triangular. Brachial plates obliquely four-sided; the thoracic triangular, smaller: both pair united to each other, and attached by a ligamentous hinge to the fixed abdominal pair, which is largest. This last pair connects to the marginal plates by two accessory plates, of which the posterior is largest, subtriangular. The posterior angle of the femoral plates forms a notch with the border of the caudal plates, which are emarginate. All the plates of the sternum with deeply sculptured angular and parallel lines. Head large. Upper and lower jaw with a hooked tooth. Skin of the neck with four series of cutaneous papillæ; two others larger, approximated beneath the chin. Fore feet naked, with two large scaly folds on the upper side, and small scales beneath, with five robust but short claws. A few scattering

tubercles on the under side of the leg. Hind legs with four claws; the fifth toe distinct, but clawless. Tail short, very robust at base, and terminating in a stout blunt horny point; the sides of the tail with from four to six series of short tubercular processes, which are likewise numerous around the vent.

Color. Shell olive brown. Sternum yellow or orange and darker, occasionally black in the vicinity of the sutures. Head brownish, with irregular lines, streaks and spots of a lighter color, which also extend to the sides of the neck. Irides dark brown. Feet and tail dusky brown; beneath lighter.

Total length,	6.0.	Length of the tail,	0.6.
Ditto of the shell,	4.0.	Height,	1.8.

New-Jersey has hitherto been considered as the highest eastern limit of this species; but it is (although sparingly) found in the southern counties of this State, west of the Hudson. I find no mention of it in Storer's Report on the Reptiles of Massachusetts, although it is cited in Hitchcock's Catalogue. It extends to Florida, and I presume through the Western States. It inhabits ditches and muddy ponds, and often takes the hook. It preys on fish and the smaller aquatic reptiles. Like the *odoratus*, it has a strong musky smell, and it cannot readily be confounded with any known species.

GENUS STERNOTHÆRUS. *Bell.*

Head sub-quadrangular, pyramidal in front, covered in front with a single plate. Warts on the chin. Twenty-three marginal plates. Sternum cruciform, bivalve, anterior valve only movable. Supplemental plates contiguous, placed on the sterno-costal suture.

THE MUSK TORTOISE.

STERNOTHÆRUS ODORATUS.

PLATE VII. FIG. 13. — (STATE COLLECTION.)

- Testudo pensylvanica.* SCHCEPFF, Hist. Test. p. 110.
T. odorante. LAT. Hist. Rep. Vol. 1, p. 122.
T. odorata. DAUDIN, Hist. Reptiles, Vol. 2, p. 189, pl. 24, fig. 3. (Sternum.)
Cistuda odorata. SAY, Ac. Sc. Nat. Vol. 4, p. 206 and 216.
Sternothærus. BELL, Zool. Jour. p. 209.
Kinosternon odorata. GRAY, Synops. apud Griffith, Vol. 9, p. 13.
Terrapene id. MERREM, Syst. Amphib. p. 27.
Testudo id. LE CONTE, Ann. Lyc. Vol. 3, p. 122.
Sternothærus id. HARLAN, Med. and Phys. p. 156.
Kinosternum id. BON. Oss. p. 169. Chelon. Tab. analyt.
Staurotypus id. DUM. et BIB. Vol. 2, p. 358.
Sternotherus id. STORER, Mass. Report, p. 210.
Sternothærus id. HOLBROOK, N. Am. Herpetology, Vol. 3, p. 29, pl. 4; and Vol. 1, p. 133, pl. 22 of 2d Ed.

Characteristics. Very small. Shell gibbous, subcarinate; first vertebral plate pointed behind. Small, brownish, with darker radiating streaks on a dark olive green ground. A disagreeable odor. Length $3\frac{1}{2}$ inches.

Description. Shell oblong, narrow in front, broader and more erected behind; the dorsal outline descends rather more abruptly behind; slightly carinated on the dorsal ridge. The first vertebral plate triangular, with its truncated axis behind; the three following hexagonal, the last smaller than the two preceding; the posterior plate sub-pentagonal, the posterior plates distinctly imbricated. Lateral plates large, the anterior irregularly subquadrate; the two following higher than broad, pentagonal; the last smallest, and also pentagonal; the intermediate marginal plate smallest, sub-quadrate; the remainder oblong, the four posterior largest; all, except the last two, separated from the shell by a groove. Sternum small, narrow, widely emarginate behind, composed of eleven plates, all with concentric angular striæ, and minute radiating striæ; the anterior intermediate or united; gular very small, triangular; brachial small; abdominal plates largest, and apparently immovable. Head and neck capable of protrusion an inch and a half from the shell. Head very large, pyramidal, four-sided, pointed, and slightly truncate in front. Eyes moderate. Nostrils large, contiguous, and placed at the extremity of the snout. Two short yellow fleshy tentacula under the chin, and two rather larger behind. Skin of the throat and neck granulate. All the feet with acute incurved claws, distinctly webbed; the place of the fifth claw on the posterior foot supplied by a broad web. The outer and inner margins of the feet furnished with a cuticular membrane, elevated into points. Scaly plates on the anterior surface of the fore feet, and on the under side of the hind feet. Tail very robust at the root, with several series of pointed processes, often with a horny tip.

Color. The color and markings of this species not easily detected in the recently caught animal, as it is usually covered with an agglutination of mud and aquatic plants; when cleansed, the shell appears of an olive brown or green, obscure, radiating dark stripes on the lateral plates, and similar longitudinal ones on the marginal plates. Sternum reddish brown or flesh-color, with a few indistinct dark blotches. Pupils black; iris golden. Head black or deep olive green. A yellow line on each side passes from the nostrils over the eye upon the neck; another somewhat broader, from beneath the nostrils, and meeting in front, passes backward under the eye upon the neck; a third, shorter, proceeds from near the symphysis of the chin, extending on each side of the lower jaw. Feet and tail reddish brown.

Length,	2·5.
Ditto of tail,	0·8.
Height,	1·2.

These dimensions are from a small specimen; the ordinary size is three inches: it is the smallest of our tortoises yet discovered. This species is one upon which modern systematists have expended much labor, the result of which may be seen in the list of synonymes.

The *Musk Tortoise* or *Mud Turtle*, *Mud Terrapin* or *Stink-pot*, (with other equally savory popular names,) is to be found in most of our ponds and ditches. It occurs from Maine to Florida, but its western limits are unknown. We know from Kirtland, that it occurs in the northern waters of Ohio. It appears to be an active, vigorous animal, biting with considerable vigor when irritated. There appears to be two varieties, of which one is smooth on the shell, while the other is sub-carinate.

GENUS CISTUDA. *Fleming.*

Shell gibbous, stout. Marginal plates twenty-four to twenty-five. Sternum oval, with twelve plates, bivalve; both valves movable on the same axis, and connected together by ligament. Anterior feet with five nails; posterior with four.

THE COMMON BOX TORTOISE.

CISTUDA CAROLINA.

PLATE I. FIG. 1. — (STATE COLLECTION.)

Testudo carolina. L. 12 Ed. p. 352.

T. claus. SCHUEPFF, Hist. Test. pl. 7.

Checkered Tortoise. PENN. Arct. Zool. Supp. p. 79.

T. clausa et virgulata. DAUD. Hist. Rept. Vol. 2, p. 207, pl. 23, fig. 1, 2.

Cistuda clausa. SAY, Ac. Sc. Vol. 2, p. 205.

C. carolina. LE CONTE, Ann. Lyc. Vol. 3, p. 124.

C. clausa. HARLAN, Med. & Phys. Res. p. 149.

C. carolina. DUM. & BIBRON, Vol. 2, p. 210.

C. id. STORER, Mass. Rep. HOLBROOK, Herpet. Vol. 3, p. 9, pl. 1; and Vol. 1, p. 31, pl. 2, of Ed. 2da.

C. clausa. KIRTLAND, Zool. Report of Ohio, p. 188.

Characteristics. Shell hemispherical, elevated. Upper jaw hooked. Vertebral plates sub-carinate. Sternum entire behind. Length 5 - 7 inches.

Description. Anterior vertebral plate carinate; the three middle vertebral plates hexagonal, sub-carinate; the fifth pentagonal, smallest. First lateral plate quadrilateral; the second largest. Marginal plates in this specimen, twenty-four; this is noticed by Merrem as unusual, but I have seen it in three or four specimens. The anterior marginal plate very small, linear. Sternum smooth, entire behind; the plates on the anterior lid smallest; scapular and brachial plates triangular; the others oblong, sub-quadrate. Posterior valve concave, not quite so flexible as the anterior, but sufficiently so as to enclose completely the animal. Fore feet with large and strong scales in front, and smaller ones behind, with short robust claws, of which the two medial were longest. Hind feet also with large scales, and four somewhat longer claws. Head stout, nostrils contiguous with the upper jaw, sometimes emarginate. Neck long. Tail short, conical.

Color. Shell with a dark brown ground, upon which are numerous irregular stellated marks and dashes, with occasional confluent blotches. Head, neck and extremities of a light lemon yellow, with irregular black stripes on the summit of the head. Sternum rosaceous, with broad irregular blotches of black.

Length of shell, 6.0.

Breadth, 4.0.

Height, 2.5.

This beautiful species, which is designated in this State under the names of *Box Tortoise* and *Land Turtle*, and in the west by the name of *Lock Tortoise*, is a very gentle and timid animal. It varies so much in its colors, that it is difficult to find any two alike. Major Le Conte has a series of drawings, exhibiting many remarkable varieties in color: One was of a uniform black; and from this to the brilliant colored individual figured in the plate, a regular transition could be traced. He has enumerated five varieties, but they are almost innumerable. In common with many observers, I had considered the angular and concentric striæ on the plates as constant characters. I have lately seen (May 1) a specimen, apparently of an adult, measuring six inches, in which the thin corneous laminæ covering the plates were gradually dropping off, or shed; leaving the new epidermis completely smooth beneath, with colors of renewed brilliancy, while the old laminæ were dull and strongly corrugated. How often does this desquamation occur? Is it the effect of disease, or is it an annual or periodical process? In this case, the desquamation was confined to the two middle dorsal, and to two lateral plates on one side, and to three on the other. The sutures between the plates, which had not desquamated, were of that deep character usually supposed to designate old age; but at the places where the desquamation had occurred, the sutures were as narrow and as little profound as in young individuals.

The Box Tortoise is common every where on dry land, although it is also occasionally met with in swamps and moist places. It never takes to the water from choice, and indeed would be drowned if retained there. It is frequently kept in cellars, under the notion that it drives away or destroys rats and other domestic vermin. One which I kept in my cellar, was found in the spring, eaten up by the rats. It feeds on insects, fruit, and the edible mushrooms. Its geographical range appears to be from Canada to Florida. It is rare in Ohio. In this latitude, it usually goes into winter quarters in the latter part of September.

BLANDING'S BOX TORTOISE.

CISTUDA BLANDINGII.

PLATE I. FIG. 2.

Cistuda blandingii. HOLBROOK, N. Am. Herpetol. Vol. 3, p. 34, pl. 5; and Vol. 1. pl. 39, pl. 3 of 2d Ed.

Blanding's Cistuda. STORER, Massachusetts Report, p. 215.

Characteristics. Shell less elevated than the preceding, ecarinate; margin entire. Sternum emarginate behind. Lower jaw hooked. Length 7-8 inches.

Description. Shell smooth, ecarinate. The first vertebral plate pentagonal; the second and third, hexagonal; the fourth with seven sides, the last octagonal. Anterior and posterior lateral plates four-sided, rounded beneath; the second and third, pentagonal. Marginal plates twenty-five, with an interrupted margin; the intermediate small; the first, third, fourth, sixth, eighth, tenth and twelfth plates quadrilateral; the second, fifth, seventh and ninth, pentagonal: all are smooth in their centres, with indistinct concentric striæ near their borders. Ster-

num bivalve, of twelve plates, full and rounded in front, deeply emarginate behind, and when closed entirely conceal the animal. Head moderate. Nostrils anterior, contiguous. Eyes large, prominent. Upper jaw broad, with its cutting edge sharp, and deeply emarginate in front. Lower jaw with a small hook. Neck long, and slightly contracted behind the head. Fore legs robust, with imbricated scales in front, and smaller ones behind. Toes palmated, with five short curved claws. Hind legs covered with small scales and granulations, and furnished with five palmated toes, the posterior clawless.

Color. Shell jet black, marked with numerous oblong and round yellow spots. Sternum dusky yellow; each plate with a large quadrangular dark blotch at its outer posterior angle. Head black, with oblong yellow spots. Lower jaw and chin bright yellow. Throat yellow, but clouded with dusky. Fore legs olive yellow in front; dusky, with yellow spots behind. Hind legs dusky above, and soiled yellowish behind. Tail black above, with two obscure yellowish lines; dusky beneath.

Length of shell, 7·0–8·0.

This species, which has been hitherto doubtless taken for a mere variety of the *C. carolina*, was first accurately described and figured by Dr. Holbrook in the work cited above. It was obtained by him from the prairies of Illinois and Wisconsin, and for some time this was the only locality. More recently it has been detected by Dr. Storer as far north as Haverhill, New-Hampshire, in 44° north latitude. It ranges unquestionably through all the northern and middle States; and hence, although not yet actually observed, must necessarily be included in our list of the Reptiles of New-York.

(EXTRA-LIMITAL.)

Genus TESTUDO, *Brongniart*. Shell solid. Sternum solid, immovable. Extremities short, thick and clavate. Toes short, and closely connected as far as the nails.

T. carolina. (HOLBROOK, Herp. pl. 1.) Shell very convex, depressed above; the last two marginal plates united; scapular plates projecting forward in a spade-like process. Tail very short. Length 12 inches. *Georgia, Florida.*

ORDER II. SAURIA.

Body long, cylindrical, covered with scales varying in size, or with small scaly granulations. Extremities four. Tail usually very long, thick at the base. Mouth not capable of dilatation, armed with teeth. Oviparous. Carnivorous.

This order comprises about three hundred species, but as they are for the most part inhabitants of the torrid zone, we have but twelve living and four fossil species in the United States. The State of New-York has but two living representatives of this order.

(EXTRA-LIMITAL.)

FAMILY EMYSAURIDÆ.

Body lizard-shaped, large. Body furnished with large bony plates, often carinated, and forming two elevated crests on the tail. Sides of the body with small scales; beneath square, slender, smooth. Feet palmate. Head large, often elongated. Fluviatile. Carnivorous.

This family corresponds with the order *Loricata* of Merrem and Fitzinger, and *Emydosaurus* of Blainville. It appears to be a link connecting the *Chelonidæ* with the order *Sauria*: it contains many extinct species.

Genus *ALLIGATOR*, Cuvier. Nostrils separated by a bony partition; forehead divided by a short prominent carina. Four large tubercles on the neck, arranged in rows on each side of the vertebral line. Muzzle elongated, broad and obtuse. Teeth unequal. Feet semipalmated, and without indentation.

A. mississippiensis. (Am. Tr. N. S. Vol. 2, p. 216. HOLBROOK, Vol. 2, pl. 7.) Dark ash brown above; lighter beneath. Four carinate plates on the neck, disposed in a square.

Genus *CROCODILUS*, Cuvier. Muzzle oblong, depressed. Teeth unequal; the fourth passing into grooves, and not into notches, in the upper jaw. Feet palmated.

We have no living representative of this genus in the United States. Dr. Harlan has described and figured, in the Journal of the Academy of Natural Sciences, Vol. 4, p. 15, pl. 1, a fossil species from the greensand of New-Jersey.

C. macrorhyncus. Jaw excessively thick. Teeth thick, short and blunt.

Genus *GAVIALIS*, Cuvier. Head produced into an elongated snout. Teeth subequal, the fourth passing into grooves, and not into holes, in the upper jaw. Hind feet palmated to the end of the toe, and indented at the external edge. Two large holes in the cranium behind the eyes, which may be perceived through the skin.

This group has no living representative in the United States. I have described, in the Annals of the Lyceum, Vol. 3, a portion of a fossil species from New-Jersey.

G. neocesariensis. (Plate 22, fig. 59.) With from fifteen to eighteen distant, conical teeth. Length 9 – 10 feet.

Genus *MOSASAURUS*, *Conybeare*. Teeth smooth, with two sharp crests, elevated from the jaw by an osseous support, pyramidal, slightly recurved, 12 – 15 on each side above and below.

This genus was first indicated by Cuvier, and the name imposed by Conybeare on a huge fossil aquatic reptile, long known in the books under the name of "the Animal of Mæstricht." It was treated by various naturalists as a crocodile, a fish, or as a cetaceous animal. In this country, I am acquainted with but two localities of this fossil genus. Consult MITCHILL, N. Y. Ed. of Cuvier's Theory of the Earth; HARLAN, Ac. Sc. Vol. 4, p. 235, pl. 14; DE KAY, Ann. Lyc. Vol. 3, p. 135.

M. major. (Plate 22, figs. 57, 58.) Closely allied to the typical species. 14 – 15 feet long. *New-Jersey, Alabama.*

Genus *GEOSAURUS*, *Cuvier*. Teeth resembling the preceding in their system of dentition, but compressed, and divided by sharp indistinctly serrated edges into two surfaces, each of which are subdivided into 4 – 5 facets.

This group of large fossil reptiles has also a representative in this country. It is from the greensand of New-Jersey, and fragments of its remains have been described and figured by me, in the Annals of the Lyceum, Vol. 3, p. 138.

G. mitchilli. (Plate 22, fig. 59.) Fifteen to twenty feet long.

FAMILY IGUANIDÆ.

Small. Tongue short and thick. Teeth in the palate. Scales on the abdomen not imbricated. Tail long and slender.

Genus *ANOLIUS*, *Cuvier*. Head elongated. Jaws and palate with small sharp notched teeth. Tongue soft, fleshy, neither cleft nor extensile. Body with minute scales. Tail cylindrical, very long, verticillate. Skin on the penultimate joints of the fingers and toes extending into an oval disk, transversely striate.

A. carolinensis. (HOLBROOK, Vol. 2, pl. 8.) Head flattened, and covered with minute scales; nostrils distant from the end of the snout; a dilatable sac under the throat. Tail nearly twice the length of the body. Length 6 – 8 inches.

FAMILY SCINCIDÆ.

All the scales on the body and tail smooth, shining, equal, imbricated. Feet two to four, and with the toes very short, sometimes rudimentary. Tongue scarcely retractile. No gular pouch.

Obs. Of this family, we know at present four living species in the United States, one of which extends to our State, and even farther east.

GENUS SCINCUS. *Daudin.*

Head oblong, pointed, covered with plates. Jaws furnished with closely set teeth; two rows of teeth on the palate. Tongue fleshy, slightly extensible, emarginate. Tympanum apparent. Neck as large as the head. Body elongated. Tail conical. Body and tail covered with small imbricated scales. Extremities with free and nailed claws.

THE BLUE-TAILED SKINK.

SCINCUS FASCIATUS.

PLATE VIII. FIG. 17. — (CABINET OF THE LYCEUM.)

Lacerta fasciata. LIN. Sys. Nat. p. 209.

Blue-tailed Lizard. PENN. Arct. Zool. Vol. 2, p. 334.

Scincus quinquelineatus? DAUD. Hist. Nat. Rept. Vol. 4, p. 272, and Var. p. 275.

Lacerta quinquelineata. GREEN, Acad. Nat. Sciences, Vol. 1, p. 348.

Scincus id. HARLAN, Med. and Phys. Researches, p. 138.

S. bicolor? ID. Ib. p. 139.

Scincus fasciatus. HOLBROOK, N. Am. Herpetology, Vol. 3, p. 45, pl. 7; and Vol. 2, p. 127, pl. 18, of Ed. 2da. STORER, Mass. Rep. p. 219.

Characteristics. Bluish black above. Body with five yellow lines; the vertebral line dividing into two on the summit of the head. Tail often blue. Length 6 – 8 inches.

Description. Body cylindrical and tapering gradually to the tail, and covered with longitudinal series of imbricated rhomboidal scales. Vertical plate hexagonal; five occipital plates, with large scales behind; eleven orbital plates proper, and two of the upper labial plates, complete the circle: rostral plate large and pentagonal. Nostrils near the snout. Eyes very small. External ear opening large, oval, vertical. Tail cylindrical, continuous with the body, and longer, with a central row of large plates beneath. Vent transverse, with two very large and two smaller scales in front. Fore feet short, scaly, with five small sharp nails; hind feet larger, with long slender toes, also furnished with nails; the second toe longer than the others.

Color. Body of a shining bluish black, and appears alternately striped with black and yellow longitudinal lines; this is produced by five bright yellow longitudinal lines over the upper surface of the body. The central or dorsal line divides on the head, and a branch passes to each nostril; another line on each side begins above the eye, and a third beneath this on each side, all gradually lost on the tail. Abdomen light bluish. Tail deep blue. Extremities brownish above, light-colored beneath.

Total length, 6.0 – 8.0.

This harmless little animal, miscalled the *Blue-tailed Lizard* and *Striped Lizard*, is not uncommon in the southern counties of the State. I did not hear of it in the western districts, although I presume it is to be found there. It is frequently found under the bark of trees. Mr. Say, in a note to Prof. Green's paper cited above, very properly denies its identity with

the *quinquelineata*, with which it is often confounded, and observes that the ultramarine color of the tail is only apparent when the tail has been broken off and reproduced. I have, however, noticed this color in too many specimens, to induce me to suppose it to be occasioned by such an accident. Dr. Storer has observed this species at Barre, Massachusetts, in latitude $42^{\circ} 30'$, which is its highest northern geographic limits along the Atlantic.

(EXTRA-LIMITAL.)

Genus *PLESTIODON*, *Dumeril et Bibron*. Nostrils open in the middle of the nasal plate. Palate with a broad mesial suture, enlarged at its anterior extremity. Sphenoidal teeth, numerous, short, straight, conical. All the scales smooth.

P. erythrocephalus. (HOLBROOK, Vol. 2, pl. 17.) Head large, broad behind, contracted before the eyes, and covered with plates; snout elongated and rounded. Body olivaceous; head bright red. Jaws and sphenoid bones armed with strong teeth. Length 12 inches. *Pennsylvania to Florida*.

Genus *LYGOSOMA*, *Gray*. Nostrils open in a single plate; anterior frontal plates wanting. Palate without teeth, and with a superficial triangular notch near its posterior margin. Scales of the body smooth.

L. laterale. (HOLB. pl. 8.) Above chesnut, with a line of black on each side. Body beneath yellowish; tail blue. Tail twice the length of the head and body. Length 6 – 8 inches. *Ohio, Southern States*.

L. quinquelineatus. (ID. Vol. 3, pl. 6; and Vol. 2, pl. 17, of Ed. 2.) Dusky above, tinged with green, and marked with five pale lines. Head pale red, with six obscure white lines, the two internal confluent on the occiput. Tail brown. Length 6 – 7 inches. *Ohio, Southern States*.

FAMILY LACERTIDÆ.

Body long, smooth, without spines. Toes free. Tongue long, extensile, deeply forked. Scales of the tail and belly in smooth transverse parallel bands.

Genus *AMEIVA*, *Cuvier*. Body with minute scales. Head pyramidal, covered with plates. Jaws with numerous notched teeth. Tongue slender, bifid. No bony plate on the orbits. Abdomen with large scales. A row of pores beneath each thigh. Tail long, cylindrical, with verticillate scales.

A. sexlineata. (HOLBROOK, Vol. 2, pl. 15.) Dark brown above, with six yellow longitudinal lines. Abdomen bluish. Tail twice the length of the head and body. Length 12 inches. *Carolina to Florida*.

A. tessellata. (HARL. Med. & Phys. p. 136.) Black, with 9 – 10 longitudinal and 18 – 20 transverse brown and yellowish lines. Scales carinate. Length 12 inches. *Arkansas*. An *Ameiva*?

FAMILY AGAMIDÆ.

Body depressed, corpulent. Tail and abdomen with small imbricated scales. Head large, inflated, often armed with spines. Throat frequently with a fold, and susceptible of inflation. Tongue short, thick. No palatine teeth. Toes simple, not enlarged, free.

This family embraces many singular and varied forms. Under the following genus are included those animals found in the southern and western part of the United States, and known under the popular names of *Horned frogs*, *Horned toads*, &c.

(EXTRA-LIMITAL.)

Genus *PHRYNOSOMA*, Weigmann. Body nearly orbicular. Head short, rounded in front; bordered laterally and anteriorly with strong spines, and covered above with polygonal subequal scales. Occipital plate semicircular.

P. cornutum. (HOLBROOK, Vol. 3, pl. 9.) Head with a range of long spines on each side of the lower jaw. Nostrils within the internal margin of the superciliary ridge. Abdomen with carinate scales. *Missouri.*

P. orbiculare. (Id. Vol. 3, pl. 10.) Lower jaw without spines. Nostrils at the anterior extremity of the superciliary ridge. Abdomen with smooth scales. *Louisiana, Arkansas.*

P. coronatum. (Id. pl. 11.) A series of eleven spines behind the head. Nostrils as in the preceding. Eight series of large rhomboidal elongated and pointed scales under the chin, reaching to the throat. A row of spines on each side of the tail to the tip. *Oregon.*

P. douglasii. (Id. pl. 12.) Nostrils as in the preceding. Head with tubercles, and not spines, on the posterior part. Body above with slightly elevated tubercles, smooth; scales beneath. Eighteen femoral pores on each side. *Oregon.*

GENUS TROPIDOLEPIS. Cuvier.

Body oblong, depressed, and covered with imbricated and carinated scales. Head short, depressed, rounded in front; occipital plate large. Thighs with a series of distinct pores. Neck contracted, smooth beneath. No dorsal nor caudal crest.

THE BROWN SWIFT.

TROPIDOLEPIS UNDULATUS.

PLATE VIII. FIG. 16. — (STATE COLLECTION.)

Lacerta undulata. DAUDIN, Hist. Nat. des Reptiles, Vol. 3, p. 384.

L. hyacinthina et fasciata. GREEN, Acad. Nat. Sciences, Vol. 1, p. 349. (Male and female.)

Uromastix. MERREM, p. 57.

Agama undulata. HARLAN, Med. and Phys. Res. p. 140.

Tropidolepis undulatus. CUVIER, apud Griffith, Vol. 9, p. 126.

Sceloporus undulatus. GRAVENHORST, Nova Acta, Vol. 18, p. 768.

Tropidolepis undulatus. HOLBROOK, N. Am. Herpetology, Vol. 3, p. 51, pl. 8; and Vol. 2, p. 73, pl. 9 of Ed. 2da.

Characteristics. Brownish, with deeper brownish irregular transverse undulating bands. Beneath green, with a large white cross. Length 5 – 8 inches.

Description. Body short, cylindrical, rather tumid, with imbricated pointed scales arranged in obliquely transverse series; these scales are carinated on the back and sides of the body, each carina ending in a sharp point. On the tail, the scales are verticillate and carinate above and beneath, commencing behind the vent. On the throat and underside of the body, the scales are somewhat smaller, smooth, rhomboidal, the tips often broken or notched into two or more jagged points. Head moderate, sub-quadrate, depressed above, obtusely pointed at the snout, and covered with rough imbricated scales. Terminal plate transversely oblong, triangular. Nostrils round, patent, near the end of the rostrum, each surrounded by ten small plates; behind these are placed the larger plates of the head, of which the anterior is hexagonal, and the posterior largest. From beneath the nostrils, proceeds a series of acutely carinated scales. Eyes moderate, with eyelids covered by minute plates. Ear openings very large, vertical. Minute recurved teeth in each jaw, and a sensible roughness on the palate. Tongue thick and fleshy, slightly fissured at the tip. A duplicature of the skin of the neck behind the ear openings, which scarcely amounts to a gular fold beneath. Fore feet slender, covered above and on the sides with carinated scales, which become gradually effaced on the fore-arm and fingers; beneath smooth. Fingers five, slender, and all covered with very acute curved nails; the thumb shortest; the next equal to the outer in length; the two others longest, subequal. Length of the fore extremities, 1.0; of the hind legs, 1.5. These latter are likewise covered on the upper surface and the sides with the same carinated pointed scales, but they are continued over the metatarsus. Toes five, very long and slender, the internal shortest; the fourth from this, half an inch long. On the under side, and rather behind, is a distinct series of from sixteen to eighteen elevated pores; posterior to this is a semicircular fold, covering a foramen; and behind this, the vent, forming a transverse fissure.

Color. Above of a reddish brown hue, with irregular waved bands of a darker color. Beneath the chin, abdomen and under sides of the extremities and tail, dingy or yellowish white. Throat and sides of a deep indigo or greenish blue. These colors are so disposed, that the underside of the animal appears as if marked with a long white cross. Toes whitish, obscurely banded with brown. In a young individual, two inches long, the color was deep olive brown, and the waved or zigzag marks were black, margined posteriorly with ash grey; the toes, fingers and tail annulate with grey; beneath uniform pearl grey, with several dusky longitudinal streaks on the posterior part. In another specimen, eight inches long, the dorsal marks and the sides were bright chesnut.

Dimensions of the specimen described above.

Total length,.....	5.5.
Length of the body to the vent,	1.8.
Length of the head measured to the ears,..	0.6.
Ditto of the tail,.....	3.2.

This is an active little reptile, abounding in forests, and apparently preferring the pine, upon which it is often seen in pursuit of insects. It was first introduced into my published list of

the New-York Reptiles on the authority of Dr. Eights, who informed me that he had taken it near Fishkill, Dutchess county. I have since obtained it from Coldspring, Putnam county. It is common over the southern and western States; is extremely active, moving with almost incredible celerity; and when irritated in confinement, elevates its spinous scales in such a manner as to present a very formidable appearance.

It inhabits in preference sandy and rocky situations; and from its abundance in pine forests, has obtained the name of *Pine Lizard*. It is also called the *Brown Scorpion*, and its activity has doubtless suggested the name of *Swift*.

It is perfectly harmless, notwithstanding its apparently venomous aspect. Like the Chameleon, and many other reptiles, it has the property of changing its color, the back assuming an azure tint; and by candle light, the blue stripes on the sides assume a dark brown or chesnut color. From the observations of Messrs. Say and Peale, it would seem that the bluish color beneath, and the white crucial mark, belong exclusively to the male.

The Brown Swift is found throughout the west, and extends from the Gulf of Mexico to the forty-third degree of north latitude.

(EXTRA-LIMITAL.)

T. umbra. (HARLAN, Med. and Phys. p. 140.) Burnt chesnut color; beneath pale ash; under side of neck deep blackish violet. Occiput spinous. Length 15 inches. *Mexico*. An *Tropidolepis*?

FAMILY OPHIOSAURIDÆ.

Scales as in the Scincidæ. Body more elongated, serpentiform. Feet small, rudimentary, varying in number, four or two; these latter are either in front or behind.

Obs. This family connects the order Sauria with the following.

Genus *CHIROTES*, Cuvier. Body slender, snake-like. Scales verticillate. Head obtuse. Two anterior feet only.

C. lumbricoides. (SAY, Long's Exped. Vol. 1, p. 484.) With two short fore legs; four toes to each, and the rudiment of a fifth. Eyes small. 220 semi-rings on the body, and as many beneath. Length eight to ten inches. *Missouri*.

ORDER III. OPHIDIA.

Body long, cylindrical, continuous with the tail, covered with plates or scales. Without feet. Jaws with numerous small teeth, and some with long poisonous fangs. Carnivorous.

OBS. This is an exceedingly numerous order, more than three hundred and fifty species having been enumerated from the tropical and temperate regions of the globe. In this State we have but sixteen to describe; and of these, but two are venomous. The order is divisible into several families, characterized by the arrangement and form of the scales, by their habitual residence on land or in the water, and by the presence or absence of poisonous fangs. Of the first family, Hydrophidæ or Water Serpents, characterized by a compressed head and body, and usually with poisonous fangs, we have none; they inhabit principally the waters of India and the Indian ocean. A representative of the next family is found in the United States, but not in this State.

FAMILY ANGUIDÆ.

Head and body covered with smooth imbricate scales, in distinct series. Bones of the shoulder and pelvis generally existing in a rudimentary state, under the skin. Tongue short, bifid. Short teeth applied against the internal sides of the jaws.

The various genera composing this family, with some already described, have been arranged by modern systematists into two families, under the names of Saurophidæ and Ophiosauridæ, which are sufficiently distinctive as pointing out their greater or less affinity with the Serpents proper, or the Sauria, and such as have hitherto been arranged under the preceding order.

(EXTRA-LIMITAL.)

Genus OPHISAURUS, *Daudin*. Body cylindrical, rather robust. Ears visible externally. Scales square, smooth, thick, semi-imbricated; a longitudinal fold on each flank, formed by smaller scales. No vestiges of limbs. Minute sharp teeth in the jaws. Vent nearly medial.

O. ventralis. *Glass-snake*. (DAUD. Vol. 7, pl. 88.) Brownish or greenish, spotted with black. Fourteen rows of scales above, twelve below. Tail longer than the body. Length 2-3 feet. *Western and Southern States.*

FAMILY COLUBERIDÆ.

Serpents with no venomous fangs. No anal appendices.

GENUS COLUBER. *Linneus.*

Head with large polygonal plates. Body with rhomboidal, carinated or smooth scales. Abdomen with single broad transverse plates; beneath the tail, double. Jaws with simple teeth, uniform in size. Hybernate. Carnivorous.

A very numerous genus, even with all the dismemberments which have followed a more critical examination of their characters. In this State we enumerate five species.

THE BLACK SNAKE.

COLUBER CONSTRICTOR.

PLATE X. FIG. 20. — (STATE COLLECTION.)

Coluber constrictor. LIN. GMEL.

Le Lien. BONN. Ophiologie, p. 15.

Le Couleuvre lien. DAUD. Hist. des Reptiles, Vol. 6. p. 402.

Coluber constrictor. HARLAN, Med. and Phys. Researches, p. 112.

The Common Black Snake. STORER, Mass. Report, p. 225.

C. constrictor. HOLBROOK, N. Am. Herpetology, Vol. 3, p. 69, pl. 15. KIRTLAND, Zool. Ohio.

Characteristics. Black; slate-colored beneath; chin and throat white. Scales smooth. Abdominal plates 175 – 185; caudal, 85 – 90. Length 3 – 6 feet.

Description. Head rather smaller than the body, which begins to taper from the vent. Rostral plates convex, prominent; the first subquadrate, smaller than the second, which are irregularly five-sided, the central plate largest. Upper labial plates sixteen. Gular plates five pair, the three anterior elongated. Eyes moderately vertical. Nostrils large, vertical, placed between the first and second pair. Body covered with smooth rhomboidal scales; beneath, with broad entire plates; beyond the vent, the caudal plates are in pairs, occasionally interrupted by an entire plate. Length of the tail, compared to the total length, is as one to four nearly.

Color. A uniform shining bluish black above; margin of the jaws, chin and throat white. Belly usually slate-colored, or bluish white. Young, spotted and speckled with black and white above.

Abdominal plates,	180.
Caudal plates,	88.
Length,	36.0 – 85.0.

The specimen which furnished the preceding description was forty inches long. I have never myself seen one of the greatest size mentioned above, but it was stated to me by a person upon whose scrupulous accuracy I place implicit reliance.

The Black Snake is a bold, active, wild and untameable animal. It climbs trees with great ease, by coiling itself round the trunk in a spiral manner, in search of eggs and young birds. Although perfectly free from any venomous qualities, they will, on some occasions, make considerable resistance, and even pursue an enemy who retreats before them. In various parts of the State, they have the popular names of *Racer*, *Pilot* and *Black Snake*. They feed on frogs, toads, and the smaller quadrupeds and birds. The lovers of the marvellous have attributed to this and many other species the power of fascination. This wonderful power, as far as I have heard, seems to be confined exclusively to birds. All the phenomena witnessed on such occasions may be readily solved by the terror occasioned by the snake's appearance near their young, and by the well known artifices resorted to by many birds to mislead an enemy. Many years since, I examined, in the collection of Dr. Mitchill, a large snake which had been sent from Massachusetts, and had been described, I know not upon what authority, as the young of the Sea Serpent. Its vertebræ were diseased nearly throughout the whole extent of the column; but as it clearly belonged to this species, the name of *Scoliophis atlanticus* must be expunged from the systems.

The Black Snake extends from Canada to the Gulf of Mexico. According to Stedman, it is found in Surinam. It is numerous over the Western States to the Rocky Mountains. Dr. Kirtland observes, that in Ohio, it is evidently on the increase as the State becomes cleared and cultivated.

THE PILOT BLACK-SNAKE.

COLUBER ALLEGHANIENSIS.

PLATE XII. FIG. 26.

Coluber alleghaniensis. HOLBROOK, N. Am. Herpetology, Vol. 1, p. 111, pl. 20.

Characteristics. Black. Scales carinate. Length 5 - 6 feet.

Description. Head long and large; vertical plate pentangular, short and broad; temporal variable, consisting sometimes of two or three narrow plates, or their place chiefly occupied by the last labial plates very much enlarged. Posterior orbital plates two in number; the anterior orbital single and very large, the local small and trapezoidal. Nostrils lateral. Eyes rather large; pupil black; iris brown. Neck small; the body much elongated, fusiform, or tapering at each extremity. Scales oblong, oval, and bipunctate at the apex; those on the back have a distinct carina; the four or five inferior rows on each side smooth; broader on the tail, and hexagonal. Tail short, tapering.

Color. Head black above; marginal plates silvery white, edged with black; throat silvery white. Body above, intense polished black; in certain lights an intense brown may be perceived. Many of the scales have marginal dashes of white, which are only evident when the

skin is distended; towards the tail, however, the scales are entirely black. Beneath, the anterior part of the abdomen is white, clouded with brown, and the posterior part of the tail entirely slate color.

Abdominal plates, 235 - 240.

Caudal plates, 60 - 72.

Length, 60.0 - 72.0.

I am indebted to my friend Dr. Holbrook for the above description of this large species, which is found in the Highlands, but which I have never met with. It is manifestly the snake which has been frequently described to me, of great length and prodigious velocity, and to which they gave the name of *Racer* and *Pilot*. As these names are also frequently applied to the Black Snake, I had supposed that species to have been intended by their descriptions.

The Pilot Black-snake appears to select in preference elevated rocky situations, for it is found along the Allegany mountains as far south as Virginia. It has hitherto been confounded with the ordinary Black Snake, but is at once distinguished from that species by the carinated scales.

THE CHAIN SNAKE.

COLUBER GETULUS.

PLATE X. FIG. 21.—(CABINET OF THE LYCEUM.)

Coluber getulus. LIN. Syst. Nat. p. 382.

Chain Snake. CATESBY, Carolina, pl. 52.

La Couleuvre chaîné. DAUDIN, Hist. Rept. Vol. 6, p. 314, pl. 77, fig. 1.

C. getulus. SAY, Am. Jour. Vol. 1, p. 261. HARLAN, Med. & Phys. p. 122.

Characteristics. Black. Thirty to forty narrow yellowish lines over the body and tail. Tail one-eighth. Length four to six feet.

Description. Body long and slender. Head small, and covered with nine plates exclusive of the rostral (see figure). The occipital plates very large; the central or vertical plate three-sided, or sub-pentagonal; supra-orbital slightly enlarged behind; post-orbital small, two in number; ante-orbital plates two, of which the anterior is smallest, and applied against the posterior nasal; anterior nasal plate excavated behind; rostral plate deeply notched beneath. Marginal plates of the upper jaw, seven on each side; on the lower jaw, nine on each side. Two pair of oblong gular plates. Teeth small, subequal, curved backward. Mouth wide. Eyes moderate. Scales oblong, hexagonal, smooth. Tail about one-eighth of the total length, with uniform bifid plates; apex corneous.

Color. Above varying from rufous brown to black. Plates of the head, chocolate-color, with abbreviated dashes of yellow or whitish. Marginal plates of the jaw, dull, or yellowish white, bordered with dark brown. About an inch apart over the back are many narrow yellowish bands, which unite with each other on the sides near the abdominal plates; these bands

are continued to the extremity of the tail, and from a fancied resemblance to a chain, has given rise to one of its popular names. Beneath metallic dingy white, tessellated with brown.

Abdominal plates,	220.	Total length,	42.0.
Caudal plates,	47.	Tail,	5.5.

This beautiful snake, which from the celerity of its movements has also acquired the name of the *Racer*, is not uncommon in the pine woods of New-Jersey, and is also found, but rarely, in what are called the *Brush plains* of Long Island. They are perfectly harmless, and feed on other reptiles. Their northern and eastern range does not extend beyond New-York, and they are found as far south as Louisiana. My friend Dr. Holbrook has arranged this species under the genus *Coronilla* of Laurenti and Schlegel. Its characters, however, do not appear to me to be sufficiently precise and distinct.

THE MILK SNAKE.

COLUBER EXIMIUS.

PLATE XII. FIG. 25. — (STATE COLLECTION.)

Coluber eximius, Dekay. HARLAN, Med. and Phys. Researches, p. 123.

C. calligaster? var. SAY. HARLAN, Ib, p. 122.

Chicken Snake. STORER, Massachusetts Report, p. 227.

C. eximius. HOLBROOK, N. Am. Herpetology, Vol. 3, p. 69, pl. 15.

Characteristics. Ovate chesnut spots over the back; dark quadrate spots on a light-colored ground, beneath. Length two to five feet.

Description. Body elongated, tapering rather suddenly from the vent to the tip of the tail. Head small; neck somewhat contracted. Rostral plate large, emarginate beneath; central plate pentagonal, large; occipital plates very large; upper labial plates fourteen, sixteen beneath. Body covered with smooth sub-hexagonal scales. Tail ending in a corneous tip, and about one-eighth of the total length. Abdominal scales occasionally divided.

Color. Large irregularly ovate chesnut-colored spots, bordered with black, and varying in number from thirty to fifty, are distributed along the whole upper surface of the body and tail. These spots are often minutely punctate with red; and the spots themselves are so disposed, that when viewed from above at a short distance, the body might be said to be annulate with white. On the flanks are similar smaller chesnut spots, alternating with those above. On the summit of the head is often seen a reddish semicircular band, extending from one eye to the other; and a large irregular reddish spot on the occiput, lighter in the centre, margined with black. The colors are very vivid at certain seasons, but change almost instantaneously after death; the large deep chesnut blotches becoming greyish, and the abdomen almost white. Beneath light pink when alive, passing into pearl grey, with many irregular quadrate dark spots.

Abdominal plates,.....	195 - 205.	Length,	36·0.
Caudal plates,	38 - 45.	Tail,.....	5·0.

This species has been, I suspect, strangely confounded with the *Trigonocephalus contortrix*, the arrangement and distribution of the colors agreeing tolerably well. In its markings, it approaches much nearer to the *doliatus* of the Naturalist's Miscellany (Vol. 7, p. 254), and more closely still to the *C. lichtensteinii* of Wagler. It is needless, however, to add that it is specifically distinct from both.

This innocent and beautiful snake is common throughout this State. It has been also observed in Massachusetts, Pennsylvania and Ohio. In this State, its most usual popular name is *Milk Snake*, although it has various other appellations. It is called *Chicken Snake*, *Thunder and Lightning Snake*, *House Snake*, and *Chequered Adder*. In some parts of Westchester it is called the *Sand-king*; but for what reason I cannot imagine. In Suffolk county, a large snake resembling this has been described to me under the name of *Sachem Snake*.

It is not unfrequently found in outhouses, and in dairies or cellars where milk is kept, which it is said to seek with avidity. It climbs well, and glides rapidly over the smoothest surfaces. It is rare to find them exceeding four feet; the more usual length is about two.

THE RING SNAKE.

COLUBER PUNCTATUS.

PLATE XIV. FIG. 29. — (STATE COLLECTION.)

The Small Black and Red Snake. EDWARDS, Gleanings, Vol. 7, p. 289, pl. 349.

Coluber punctatus. LIN. Syst. Nat.

C. torquatus. SHAW, Gen. Zool. Vol. 3, p. 553.

La Couleuvre ponctuée. DAUD. Hist. des Reptiles, Vol. 7, p. 178.

Homolosoma punctatus. WAGLER.

Natrix edwardsii et punctatus. MERREM, Versuch. p. 131, 136.

C. punctatus. HOLBROOK, N. Am. Herpetology, Vol. 2, p. 115, pl. 26. SAY, Am. Jour. Vol. 1, p. 261.

C. punctatus. HARLAN, Med. and Phys. Res. p. 117. STORER, Mass. Report, p. 225.

Characteristics. Small. Bluish brown; beneath, red; often with a triple row of black dots; a white collar around the neck. Length 12 - 18 inches.

Description. Body slender, elongated, with smooth rhomboidal scales. Head small, flattened above, with ten plates on the surface. Nose rounded. Labial plates above, seventeen; beneath, fifteen. Nostrils and eyes large. Tail nearly one-fourth of the total length, acute, ending in a horny tip. Anal plate often divided.

Color. Above bluish brown, approaching to black. Head lustrous, black. Across the occiput a yellowish white collar round the neck, margined with black; occasionally the collar is not perfect, but in its place two or more whitish blotches. Beneath yellowish white, and more frequently deep reddish orange. At the junction of the dark color above with the lighter

color beneath on the flanks, the colors unite in such a way as to leave a series of dark triangular marks, giving it a serrated appearance; these serratures are continued to the tip of the tail, and become effaced towards the head. In adults, the abdomen for the most part immaculate; in the young, a minute dark point on the middle of the edge of every abdominal plate, as far as the vent.

Abdominal plates,	145 - 155.	Length,	12·0 - 18·0.
Caudal plates,	45 - 55.	Ditto of tail,	3·0 - 4·0.

This pretty little snake is found in every part of the State. It occurs under rocks and stones, and is frequently seen under the bark of decayed trees. It is very common under the bark coverings of the huts of the frontier settlers. Feeds upon worms, insects, grubs, etc., and is perfectly inoffensive. Emits a strong and disagreeable odor. Occurs from Maine to Louisiana.

THE GRASS SNAKE.

COLUBER VERNALIS.

PLATE XI. FIG. 22.

Coluber vernalis, Dekay. HARLAN, Med. and Phys. Researches, p. 124.

C. id. STORER, Mass. Report, p. 224. HOLBROOK, N. Am. Herp. Vol. 3, p. 79, pl. 17.

Green Snake. KIRTLAND, Zoology of Ohio, p. 188.

Characteristics. Small. Green, with smooth scales. Length one to two feet.

Description. Body slender, tapering regularly to the tip of the tail, and covered with smooth rhomboidal scales. The tail is so much attenuated as to render it difficult to count the caudal scales. Anal plate frequently bifid. Head small, flattened above, slightly larger than the neck. Labial plates above, fifteen; the rostral plate emarginate in front. Plates of the head, 2.2.3.2.

Color. Grass green above; beneath white, tinged with yellow; head dark olive-brown; upper labial plates and throat dull white.

Abdominal plates, ..	125 - 135.	Total length, ...	12·0 - 26·0.
Caudal plates,	80 - 90.	Tail,	4·0 - 6·5.

This innocent and beautiful species, known in this State as the *Green* or *Grass Snake*, has long been confounded with the *estivus* of the Southern States, from which it is readily distinguished by its inferior length and carinate scales. It feeds on insects, and is exceedingly lively and quick in its movements. It is very numerous in the marshes about Salina and Cayuga; and, as I have been informed by credible eye-witnesses, fights furiously with the Striped Snake previously described. Its color changes upon immersion in alcohol, from a brilliant green to a dull blue. I am inclined to suspect, that in this State, it has been

described as *ceruleus* by Linneus; always supposing an error to exist in his enumeration of the subcaudal plates.

The Grass Snake is found from Massachusetts to Pennsylvania. It is also seen, but not abundantly, in Ohio.

(EXTRA-LIMITAL.)

C. guttatus. (HOLBROOK, Vol. 2, pl. 24.) Smooth. Reddish brown above, with a series of deeper red large blotches, margined with dusky; beneath white, with quadrate black spots. Abdominal plates, 126; caudal, 64. Length four to six feet. *Southern States.*

C. couperi. (Id. Vol. 3, pl. 16.) Head triangular, thick. Scales very large, bluish black. Beneath bluish black, and reddish about the throat. Length ten to twelve feet. *Carolina, Georgia.*

C. sayi. (Id. Vol. 4.) Large. Body robust, elongated, black, covered with numerous small rounded yellowish white spots over the head, body and tail. *Alabama.*

C. testaceus. (Id. Vol. 3, pl. 13.) Body above pale, sanguineous or testaceous; beneath sanguineous, immaculate. Abdominal plates, 198; caudal, 80. Length five feet. *Rocky Mountains.*

C. quadrivittatus. (Id. Vol. 1, pl. 21.) Carinate. Greenish clay-color above, with four longitudinal bands; yellowish beneath. Abdominal plates, 233; caudal, 90. Length 4 - 6 feet. *Carolina, Florida.*

C. occipitamaculatus. (STORER, Mass. Rep. p. 230.) Small. Greyish, with an indistinct lighter band along the back; three large white spots behind the occipital plates. Scales smooth. Abdominal plates, 124; caudal, 38. Length 10.5. *Massachusetts.*

C. obsoletus.

C. rhombomaculatus. } (HOLBROOK, ined.)

C. doliatus.

GENUS TROPIDONOTUS. Kuhl.

Head oblong ovate, depressed, distinct. Two nasal plates. Eyes moderate; pupil round. Loral plate single; anterior orbital plate the same. Scales sub-hexagonal, notched posteriorly, elongated and strongly carinated.

Obs. The animals of this genus possess the power of elevating the ribs, and are thus enabled to flatten the body. This enables them to swim well, and hence they are all more or less aquatic. In this State four species have been observed.

THE WATER SNAKE.

TROPIDONOTUS SIPEDON.

PLATE XIV. FIG. 31. — (STATE COLLECTION.)

Coluber sipedon. LIN. Syst. p. 379.*C. porcatus*? DAUD. Hist. Reptiles, Vol. 7, p. 204.*Brown Water Snake*. HARLAN, Med. & Phys. Researches, p. 114.*The Water Adder*. STORER, Mass. Report, p. 228.*Tropidonotus sipedon*. HOLBROOK, N. Am. Herpetology, Vol. 4, p. 29, pl. 6.

Characteristics. Dark brown, or obscurely banded with darker; beneath white, varied with brown or rufous. Abdominal plates, 130 – 35; caudal, 70 – 75. Scales strongly carinate. Length two to five feet.

Description. Body robust. Tail rather abruptly tapering. Scales sub-imbricate, carinate; those on the three or four series adjacent to the middle of the back, so conspicuously carinated as to exhibit the appearance of deep grooves between them. The tail ends in a consolidated corneous tip, popularly termed a *horn*. Plate on the head large, the vertical or central pair largest; labial plates above sixteen, beneath eighteen.

Color. This is exceedingly variable, and does not appear to depend on age; for in very small ones of the same size, the markings are often dissimilar. Usually of uniform dull brown color above, dark mahogany colored sides, and white varied with reddish beneath. In the specimen figured on the plate, which was two feet and a half long, the following was the arrangement of the colors: Back dark ash; on the sides a series of dark chocolate-colored vertical bands, fifty-seven in number, dilated over the back, narrowed on the flanks, and margined with blackish, the intervening spaces ash-colored. Beneath, marbled with cinereous and coppery. Chin white; sides of the jaws whitish; numerous short, dark, vertical stripes. A black spot in front on the chin. Upper surface of the head uniform, polished, dark brown.

Abdominal plates, 140.

Total length, 30·0.

Caudal ditto, 75.

Length of tail, 8·0.

All the colubrine snakes take to the water more or less, and move about in it with great ease; but this species may be said to live in it habitually. It is called indifferently the *Water Snake* or *Water Adder*, and is erroneously said to be poisonous. It is frequently found in fields which are occasionally overflowed, feeding upon frogs and fishes. One was found to have swallowed a small pike. A correspondent of the Monthly American Journal of Geology asserts that he once saw a water snake lying on a bush over a stream, under which some chubs were swimming; he watched the snake, and saw it fall or plunge into the water from the bush, and seize a chub. Although of a sullen vicious temper, and with a threatening aspect, it is completely harmless.

The Water Snake is found in this and the States adjacent to us on the east. It also occurs in Pennsylvania and Ohio, but I am unacquainted with its southern geographical limits.

THE STRIPED SNAKE.

TROPIDONOTUS TENIA.

PLATE XIII. FIG. 27. VARIETY. — (STATE COLLECTION.)

Coluber sirtalis? LIN.*C. triple rang*? LACEPEDE, Vol. 2, p. 131, pl. 4, fig. 2.*C. tania*. *Die Band Schlange*. SCHCEFF, Reise, Vol. 1, p. 496.*C. terordinatus*? LATREILLE, Hist. Reptiles, Vol. 4, p. 70.*C. triple rang*. DAUDIN, Vol. 7, p. 151.*La Couleuvre sirtale*. DAUD. Hist. Reptiles, Vol. 7, p. 146.*C. sirtalis*. HARLAN, Med. and Phys. Researches, p. 116. STORER, Mass. Report, p. 221.*Tropidonotus sirtalis*. HOLBROOK, N. Am. Herpetology, Vol. 4, p. 41, pl. 11. KIRTLAND, Ohio, p. 188.

Characteristics. Body robust; tail short, suddenly tapering, one-sixth of the total length. Greenish brown, with three light-colored stripes along the body. Length 2 - 4 feet.

Description. Body stout, covered with oblong strongly carinate scales, with the exception of a series of what may be termed accessory abdominal plates along the flanks; these, however, under the lens, show a slight carination. Head pyramidal, flattened above, with four series of plates behind the rostral plate, the posterior or occipital largest. Rostral plate rather more upturned than in the following species. Fifteen labial, including the rostral plate, above, and twenty-one beneath. The intermediate plates between the second pair of gular plates, narrow, subequal. Numerous minute recurved teeth, in the jaws and palate. Tail short, rapidly attenuated to the tip; often calcarate, or with a horny tip.

Color. Above darkish brown, and in some lights an olive green.* Three greenish yellow stripes along the whole length of the body; one on the centre of the body, and one along each side. The dorsal stripe commences a short distance behind the occipital plates. The lateral stripes, after passing the vent, become confounded with the general color of the tail. A row of obsolete black spots (in spirits usually very manifest) on each side of the dorsal stripes, and a similar series on the upper margin of the lateral stripes. These spots are frequently alternate, occasionally confluent. Beneath, neck yellowish white; abdomen and tail greenish yellow, with occasionally irregular black spots on the upper edges of the abdominal plates; these are sometimes effaced, and their places supplied by a cloud of brownish: this is, however, rare. In the young the stripes are greenish (blue in spirits), the dark dorsal

* It is rare to find, among the ophidian reptiles, any two of exactly the same shade of color, even when alive; this appearing to depend upon the latitude, season, and plentiful or scanty supply of food. In cabinet specimens, these discrepancies are still greater; and colors, which in the living subject are scarcely apparent, become very conspicuous after having been immersed in liquors of different strength and qualities. A good guide is much wanted to exhibit the changes which certain colors undergo after immersion in spirits. It has been ascertained that the brilliant green of reptiles changes to dull blue; yellow changes to white; the black, brown and metallic colors remain unaltered; red becomes brownish, or is finally obliterated. It may not be unimportant to add, that by exposing a reptile which has been for some time in spirits, for a short time to the rays of the sun, we may, by the reflected light, form some judgment of the original markings.

spots more obvious, and the two large black ovate spots behind the occipital plates ; the tail more slender than in the adult, but its relative proportions are the same. We reduce all the various appearances presented by different individuals observed in this State, to the following varieties, but doubtless many others may be observed :

Var. a. Reddish above ; spotted between the scales with dusky ; the dorsal stripe bright red, the lateral ones yellowish.

Var. b. Light-colored above, with a row of dark spots in place of dorsal and lateral stripes. We suppose this may have been possibly intended for the *triple rang* of Lacépède, cited above.

Var. c. The dorsal stripe alone visible, with two series of alternate black spots on each side. It is this variety which we have selected, as it has often been confounded with another species not found in these latitudes.

Var. d. The whole under surface of a deep mahogany color.

Abdominal plates,...	145 - 155.	Length,	42.0.
Caudal plates,	55 - 65.	Ditto of tail,	7.0.

The short linnean description of *C. sirtalis*, from a specimen furnished by Kalm, may possibly have been intended for this species ; but the characters are too insufficient and too inaccurate to authorize the adoption of that name.

On the authority of my lamented friend, the late Mr. Say, (in letters to me,) I had been disposed to refer the species under consideration to the *ordinatus*. Linneus, however, had evidently some small southern species in view ; and this is evident from his reference to the 52d plate of Catesby, which is entirely inapplicable to our species. The accompanying text of Catesby, throws no light on the subject : " Green spotted plate ; these grow to four times " the bigness of the figure. I would willingly avoid mistakes by describing the same serpent " twice, and multiplying this kind to more than there are ; and I am diffident in determinating " whether this be a different species from the spotted ribbon snake (pl. 51), which somewhat " resembles it, though of a different color." It is remarkable that Linneus no where cites this plate 51, which Catesby accompanies with the following text : " A slender snake ; the " upper part brown, spotted with black ; belly white ; on the ridge of the back, extends a list " (band) of white the whole length of it."

In the Dictionnaire des Sciences Naturelles (Edition de Levrault), the *sirtalis* is arranged among the species which are too little known to merit transcribing, or which have been confounded with others, and the *ordinatus* is passed over in silence. We leave it to our southern naturalists to determine what species was intended by *ordinatus*, or whether that and *sirtalis* should not be expunged from the systems.*

* Since writing the above, I perceive that the true *ordinatus* has been re-discovered by Dr. Holbrook.

The first positive notice which I have been enabled to find of this species, is contained in the Travels of Schœpff.* The following extract indicates plainly enough this species: "*Die Band Schlange, Garter Snake, Coluber tænia.* (Scut. abdom. 145 – 148; squam. sub-caud. 60 – 65.) About three to three and a half feet long; the blackish brown back has three handsome pale yellow (blatzgelbe) narrow stripes running straight from the head to the tail, by which these serpents are readily recognized."

The Striped Snake is of a robust clumsy make, and is comparatively sluggish in its movements. It is known under various popular names, such as *Green Garter-snake, Slow Garter, Swamp Garter, Water Garter, Striped Adder, &c.* It feeds on frogs, toads, and the smaller quadrupeds. It takes the water readily in pursuit of its prey, and chiefly affects low marshy places. When irritated without the means of escape, it elevates its scales in such a manner as to give the whole body a peculiarly roughened appearance; and under such circumstances, will bite, and leave a troublesome though not dangerous wound. In Ohio, according to Kirtland, its numbers are rapidly decreasing; as it is eaten by hawks, owls, hogs, and in some instances by fowls, ducks and turkeys.

It is our most common species, and I have even noticed it in the northern parts of the State at an elevation of two thousand feet above the tide water. It extends to Canada. It is frequently found in great numbers, and sometimes in company with rattlesnakes, under peat moss, at a sufficient depth to protect them from frost. In the neighborhood of New-York, they retire about the beginning of October, and reappear about the last of May, although their times of appearance and retreat vary very much with the nature of the season.

THE YELLOW-BELLIED SNAKE.

TROPIDONOTUS LEBERIS.

PLATE XI. FIG. 23.

Coluber leberis. KALM, Travels in the U. S. LINNEUS, Syst. Nat.

Vipera id.? DAUDIN, Hist. Reptiles, Vol. 6, p. 218.

C. septemvittatus. SAY, Jour. Acad. Nat. Sc. Vol. 4, p. 240. HARLAN, Med. & Phys. Res. p. 118.

Tropidonotus leberis. HOLBROOK, N. Am. Herpetology, Vol. 4, p. 49, pl. 13.

Characteristics. Olive brown, with three black lines; beneath yellow, with four distant longitudinal series of quadrate spots. Length two to three feet.

Description. Head small, rounded in front. Vertical plate pentagonal, broadest in front; frontal plates hexagonal, descending on the sides of the head so as to join the loreal plate. Rostral plate six-sided; occipital pentagonal, smaller, notched behind. Nasal plates two, quadrilateral, subequal. Nostrils lateral, near the snout. Neck contracted, covered with

* Schœpff came out to this country as surgeon to a band of German mercenaries employed by England during the Revolutionary war. He is favorably known by his various papers in the Transactions of the Berlin Natural History Society, on the Fishes of New-York; and by his *Historia Testudinum*, and a work on the Mineralogy of North America.

small carinate scales. Body above with hexagonal strongly carinate scales, slightly notched behind. Tail long and slender.

Color. Head above olive-brown; lips yellowish. Body above olive-brown, with three longitudinal dusky lines; beneath with four parallel dusky longitudinal lines.

Abdominal plates,	143.
Subcaudal,	70.
Length,	25·0 - 36·0.

I have never seen this serpent in the State of New-York; but Dr. Holbrook, whose description I have availed myself of, has observed it not only in this State, but in New-Jersey, Pennsylvania, Ohio and Michigan. Little is known of its habits. It is said to affect water and moist places.

THE SMALL BROWN SNAKE.

TROPIDONOTUS DEKAYI.

PLATE XIV. FIG. 30.—(STATE COLLECTION.)

Coluber dekayi. HOLBROOK, N. Am. Herpetology, Vol. 4, p. 53, pl. 14.

Characteristics. Reddish brown; a lighter colored dorsal stripe, with a double row of small blackish spots. Length 12 - 15 inches.

Description. Head somewhat elongated, slightly larger than the neck. Body slender, covered with small hexagonal scales, and an accessory row near the abdominal plates much larger. Supra-orbital plates elongated, projecting. Nasal plates two, quadrate, subequal. Frontal plates broad and pentagonal, shortest on their lower margins. Anterior orbital plate single and large; posterior two, subequal. Upper labial plates fifteen; lower, thirteen. Anal plate frequently divided.

Color. Reddish brown, with a darker spot beneath the eye, and another at the angle of the mouth; with two oblong blackish spots on the sides of the occiput. A pale yellowish grey longitudinal stripe extends from the head nearly to the extremity of the tail; on each side of this stripe is a double row of small blackish spots, alternating with each other. Beneath dull yellowish tinged with green, with numerous minute black dots approaching a regular series.

Abdominal plates,	125 - 135.
Subcaudal,	35 - 45.
Total length,	10·5 - 15·5.

I observed this species many years since, and was for some time disposed to consider it as the young of *T. tania*. Recently my friend Dr. Holbrook has examined it, and determined it to be a new species. All the specimens which I have seen, were either in or near the water. For the specimen figured in the plate, I am indebted to John Crumby, Esq., a zealous sports-

man and acute observer, who captured it as it was swimming across a large bay on the northern coast of Long Island. It has been noticed in Massachusetts, Michigan and Louisiana.

(EXTRA-LIMITAL.)

- T. ordinatus*. (HOLBROOK, Vol. 4, pl. 12.) Five series of small, alternate, subquadrate, dark spots on the sides. Scales carinate. Abdominal plates, 143; caudal, 66. Length 2 - 3 feet. *Maryland and South.*
- T. erythrogaster*. (Id. Vol. 4, pl. 7.) Brick-dust color, tinged with green at the sides; beneath copper-colored. Abdominal plates, 147; caudal, 60. Length 3 - 4 feet. *Carolina.*
- T. niger*. (Id. Vol. 4, pl. 9.) Elongated. Dusky brown, almost black; throat and neck milky white; beneath, slate. Abdominal plates, 143; caudal, 64. Length 2 - 3 feet. Found in Massachusetts and Maine, and probably in New-York.
- T. rigidus*. (Id. Vol. 4, pl. 10.) Brown; beneath brownish yellow. Two contiguous series of oblong dark spots on the centre of the abdomen. Abdominal plates, 133; caudal, 51. *Pennsylvania.*
- T. fasciatus*. (Id. Vol. 4, pl. 5.) Carinate. Body robust; brownish above, with about thirty oblong red marks on the flanks. Abdominal plates, 140; caudal, 42. Length $2\frac{1}{2}$ feet. *Carolina, Louisiana.*
- T. taxispilatus*. (Id. Vol. 4, pl. 8.) Carinate. Body robust; above light chocolate, with a triple series of subquadrate and oblong black spots. Abdominal plates, 144; Caudal, 79. Length three feet. *South Carolina, Georgia.*

GENUS LEPTOPHIS. *Bell.*

Head much elongated, suboval, narrow, covered with plates as in Coluber. Loral plate single; one anterior and two posterior orbital plates. Body long and very slender, covered with sub-hexagonal carinate scales. Tail very long.

Obs. Hitherto, but two species have been observed in the United States. They are remarkable for their extreme activity.

THE RIBBON SNAKE.

LEPTOPHIS SAURITA.

PLATE XI. FIG. 24. — (STATE COLLECTION.)

Coluber saurita. LIN. GMEL. CATESBY, Vol. 2, p. 50. pl. 50.

Le Saurite. LACEPEDE, Hist. Nat. des Serpens, Vol. 2, p. 101. DAUDIN, Vol. 7, p. 104, pl. 81, fig. 2.

Anguis eryx. WILLIAMS, Nat. Hist. Vermont.

A. saurita. HARLAN, Med. and Phys. Res. p. 115.

The Riband Snake. STORER, Mass. Rep. p. 229. HOLBROOK, N. A. Herpetology, Vol. 4, p. 21, pl. 4; and Vol. 4, p. 21, pl. 4, of 2d Ed.

Characteristics. Body slender. Tail filiform, nearly half the length of the body. Chocolate-brown, with three yellowish stripes. Length one to two feet.

Description. Body exceedingly slender, rarely exceeding half an inch in diameter; covered with small oblong hexagonal carinate scales. Head small, slightly larger than the neck. Plates on the head, 2.2.3.2, smooth. Labial plates above, fifteen; twenty-one beneath. The intermediate plates between the second gular pair, unequal; the posterior broad, and largest. Vertical plate narrower than in the preceding species. Eyes prominent, conspicuous.

Color. Above chesnut brown or bay, with three narrow bright-yellowish or white longitudinal stripes; the central or dorsal stripe extending to the posterior plates of the head, and the lateral ones passing under the orbits, and dilated into the white of the lower jaw. Beneath dull white, immaculate, verging to greenish under the tail. Lateral portions of the abdominal plates dull chesnut; lower half, as far as the fifth orbital, and the inferior post-orbital plates, white. There are two varieties which seem to merit description:

Var. a. Small black and distinct dots on each side of the dorsal stripe, and along the upper margin of the lateral stripes.

Var. b. The black dots on each side of the dorsal stripe confluent, and forming a black border.

Abdominal plates,... 155 - 165.

Length,..... 12.0 - 24.0.

Caudal plates,..... 110 - 120.

Ditto of tail,.... 4.0 - 6.0.

This delicate and graceful little snake is far less common than the preceding. It is more exclusively a southern species, although found sparingly in Massachusetts, and possibly as far east as Vermont.

We are indebted to Linneus for the first authentic account of this snake, under the name of *saurita*. This name indicates its resemblance to a striped lizard; for as the observer views it gliding rapidly among the herbage, he is in doubt whether it is a serpent or a lizard. The characters assigned by Linneus are, however, inaccurate; partly owing to his having trusted to the execrable figure of Catesby, or to altered specimens. "Scutellis 21" is obviously a misprint, which is corrected in the twelfth edition. "Virescens lineis tribus virescentibus," could only have been derived from cabinet specimens, or from a badly colored plate of Catesby. Catesby's notice itself is very meagre, and scarcely accurate: "*Short Ribbon Snake*. Slender, "not much bigger than the figure. Upper part of the body dark brown, with three parallel "white lines extending the whole length of the body; belly white."

The Ribbon Snake, or as it is frequently called in this State, the Little Garter Snake, is an exceedingly nimble animal. It climbs trees, and feeds on toads, frogs, and even the larger insects. It is a gentle animal. It has been confounded with the *C. richardii*, Bory (An. Sc. Nat. Vol. 1, p. 408, pl. 24), but is very distinct. In Ohio, according to Kirtland, it seeks the most retired woods for its residence.

(EXTRA-LIMITAL.)

L. astivus. (HOLBROOK, Vol. 4, pl. 3.) Carinate. Green above, yellowish white beneath. Abdominal plates 160; caudal 140. Length two feet. *Delaware, Maryland, Louisiana.*

GENUS CALAMARIA. *Boié, Wagler.*

Head small. Two frontal plates descending to form part of the orbit. One anterior and one posterior orbital plate; no loreal plate.

THE RED SNAKE.

CALAMARIA AMÆNA.

Coluber amœnus. SAY, Acad. Nat. Sciences, Vol. 4, p. 237.

C. id. HARLAN, Med. and Phys. Res. p. 118.

Zacholus id. WAGLER.

The Red Snake. STORER, Mass. Rep. p. 226.

Calamaria amœna. HOLBROOK, N. Am. Herpetology, Vol. 4, pl. 27.

Characteristics. Small. Reddish brown; beneath red. Scales smooth. Tail short, abrupt. Length 6 – 12 inches.

Description. Body small, cylindrical, with smooth polished elongated obscurely pentagonal scales. Tail about one-seventh of the total length, abruptly attenuated to a solid corneous tip. Head small, obtusely rounded; terminal plate curving slightly on the top of the head, so as to be nearly horizontal above. The first pair of plates short, broader than long; second pair rather large, oblique, the posterior outer angle reaching the eyes. Vertical plate convex, rounded, sub-triangular, wide before, and angulated on the anterior middle; the posterior angle acute. Posterior plates a little convex, with a single scale between their tips. Eyes with one scale behind; one before, twice as long as the posterior one; small plate above the eye, less than half the length of the central plate. Teeth very minute.

Color. Reddish brown or dark slate above; beneath bright red, or rosaceous.

Abdominal plates,	125 – 135.	Length,	5.0 – 10.0.
Caudal plates,	25 – 35.	Tail,	1.0 – 2.0.

This is a beautiful little serpent, found under stones and logs. I have not met with it, but have taken Say's description. Its present geographical limits extend from New-Hampshire to Pennsylvania.

(EXTRA-LIMITAL.)

C. elapsoidea. (HOLBROOK, Vol. 4, pl. 28.) Small. Body scarlet, with 18 – 20 white rings, broadly bordered on each side with black. Abdominal plates, 170; caudal, 38. Length 12.0. *Carolina, Georgia.*

C. striatula. (Id. Vol. 4, pl. 29.)

Genus *PSAMMOPHIS*, *Holbrook*. Plates of the head as in *Coluber*. Body excessively long and slender. Scales over the tail, not imbricated.

OBS. Under this name, Dr. Holbrook proposes to arrange a group of serpents characterized by various peculiarities.

P. flagelliformis. (HOLBROOK, Vol. 1, pl. 19, Ed. prima; Vol. 4, pl. 2, Ed. secunda.) Supra-orbital plate projecting over the eye. Body long and slender; the anterior part deep black, both above and below; the middle varied with brown and white. Tail one-fourth of the length. Abdominal plates, 203; caudal, 109. *South Carolina, Florida*.

Genus *HELICOPS*, *Wagler*. Head depressed, smaller than the neck. Loral plate wanting; two posterior, and one anterior orbital plate. Mouth inferior, ascending at the angle; posterior tooth on each side longest. Body elongated, robust, with smooth scales.

H. erythrogrammus. (HOLBROOK, Vol. 4, pl. 25.) Smooth. Bluish black, with three longitudinal red lines and a series of bluish black spots on each side of the abdomen. Abdominal plates, 178; caudal, 39. Length three and a half feet. *Carolina*.

H. abacurus. (Id. Vol. 4, pl. 26.) Smooth. Bluish black above; flanks with transverse bright red bands. Beneath red, with somewhat regularly arranged black spots. Abdominal plates, 195; caudal, 34. Length four feet. *Carolina, Louisiana*.

Genus *RHINOSTOMA*, *Wagler*, partim. Posterior maxillary tooth long, cylindrical, pointed, fixed. Head not as large as the body. Rostral plate not carinate, but sub-acuminate.

R. coccinea. (HOLBROOK, Vol. 4, pl. 30.) Scarlet, with jet black rings in pairs, not surrounding the body; the black rings separated by yellowish white spaces. Length 2 - 3 feet. *Carolina, Georgia*.

Genus *PITUOPHIS*, *Holbrook*. Head elongated, oval, four-sided; the snout prolonged. Frontal plates four, in a transverse row. Rostral plate an isosceles triangle; basis rounded and prolonged; apex pointed, and received between the anterior frontal plates. Two anterior and three posterior orbital plates. Teeth rather larger in front. Scales strongly carinated.

P. melanoleucus. (HOLBROOK, Vol. 4, pl. 1.) White, with sub-rotund black or dusky blotches. Abdomen pale cream, with a series of subquadrate black blotches. Abdominal scales, 216; subcaudal, 60, bifid. Length 6 - 7 feet. *Jersey to Florida*. Will probably be found in this State.

GENUS HETERODON. *Pal. de Beauvois.*

Teeth unequal; the posterior maxillary teeth largest. Head triangular, pointed. Rostral plate pyramidal, triangular, ridged above, and pointed at the tip.

THE HOG-NOSED SNAKE.

HETERODON PLATYRHINOS.

PLATE XIII. FIG. 28, A. PLATES OF THE HEAD. — (CABINET OF THE LYCEUM.)

Heterodon à large nez. LATREILLE, Hist. Rept. Vol. 4, p. 32.

Heterodon. DAUD. Vol. 7, p. 153.

Coluber heterodon. SAY, Am. Jour. Vol. 1, p. 261. HARLAN, Med. and Phys. Res. p. 120.

Heterodon platyrhinos. HOLBROOK, N. Am. Herpetology, Vol. 2, p. 97, pl. 21.

H. id. STORER, Mass. Rep. p. 231. TROOST, Ann. Lyc. Vol. 3, p. 183.

Characteristics. Greyish tinged with yellowish, and a triple series of blackish blotches. Dorsal series largest, bordered with black; lateral series smaller, and irregularly rounded. A dark band through the eyes. Length two feet.

Description. Body robust, and covered with oval-oblong carinate scales; the two or three series next to the abdominal plates, smooth. The body tapers rather suddenly from the vent. Tail short, one-sixth of the total length, ending in an acute tip. Ventral scale divided. Head large, triangular, flattened above, with a pointed snout. Teeth in the posterior part of the jaw long, hollow, not perforated, and four in number. The plates cover but a small portion of the head. Central plate irregularly six-sided, the lateral margins being longest, and the anterior meeting at an obtuse angle; supra-orbital oblong, broadest behind, and projecting over the eye. Around the eye are arranged ten small orbital plates; besides these, there are two pair of anterior nasal plates, of which the superior are largest, the lower plate being behind the posterior nasal plate, and furrowed in its centre. Nasal plates two on each side; the anterior lunated behind, the posterior excavated in front to complete the nostril. Occipital plates triangular, with the apices truncated at their junction with the vertical plate. Frontal plate uniting laterally with the anterior and posterior nasal plates; between the frontal plates is a long narrow azygous plate, ridged above, and uniting in a sub-imbricate manner on nearly the centre of this plate with the rostral plate. Rostral plate triangular, upturned in front, with a strong carina on its upper surface, and excavated beneath. Labial plates above eight on each side of the lower jaw; nineteen in all. Nostrils large, lateral, and near the rostrum. Eyes large, prominent. Head in repose not much larger than the neck; but when irritated, it distends to twice its usual breadth, the summit becoming flattened.

Color. Brassy yellow above, with three series of irregular subquadrate or rounded deep chesnut, blackish or ash grey blotches, occasionally united on the posterior part of the body and tail, forming rings; the series on the sides much smaller, and alternating with the larger ones. Summit of the head dark rufous, with irregular blotches and dots of dark brown. A

black dash extends obliquely backwards from the eye to the angle of the jaws. A rounded black spot behind the occiput. Beneath dusky yellowish, or dull whitish.

Young, of a uniform light ashen grey, with the lateral series of spots black, subquadrate, and united with each other across the back by dark-colored bands, with intervening lighter ones. Beneath greenish grey, varied with dusky. A short rufous transverse band in front of the eyes. Over the eyes, a rufous band; becomes dilated on the sides of the neck.

Abdominal plates, .	130 - 142.	Length,	12.0 - 25.0.
Caudal plates,	42 - 48.	Tail,	2.5 - 4.0.

This well known species has a venomous aspect, particularly when irritated, but is entirely harmless. In this State, it has various popular names: *Blauser*, by the early Dutch settlers, from its habit of distending or blowing up the skin of its head and neck; this property I have noticed in very young individuals which I have kept for some time. It is also called *Deaf Adder*, *Spreading Adder*, *Hog-nose* and *Buckwheat-nose*; the latter from some fancied resemblance between that grain and its rostral plate. It is found frequently in dry sandy soils; but I have observed them also in low and wet meadows, apparently in pursuit of frogs, etc. It is rather common in the southern parts of this State. It has been noticed in New-Hampshire and Massachusetts. It occurs in Michigan, Tennessee, and throughout the Western States. Southward it extends to Florida.

(EXTRA-LIMITAL.)

H. simus. (HOLBROOK, Vol. 4, pl. 15.) Azygous plate between the frontal, surrounded by 6 - 8 smaller plates. Grey, with a vertebral series of subquadrate or rounded black spots on transverse bars; tail fawn-colored. Abdominal plates, 132; caudal, 39. Length 12 - 13 inches. *Carolinian, Georgia*.

H. niger. (Id. Vol. 4, pl. 16.) Entirely black; beneath greyish. Body thick and clumsy. Abdominal plates, 135 - 145; caudal, 50 - 55. Length three feet. *Tennessee, Georgia*.

H. annulatus. (TROOST, Ann. Lyc. Vol. 3, p. 188.) Slender. Body surrounded with black and yellow rings. Beneath yellowish white. Length 29 inches. *Tennessee*.

H. tigrinus. (Id. Ib. p. 189.) Smaller than preceding. Varied with black and ashen grey. A black horseshoe band runs through the eyes to the angle of each jaw. Length 16 inches. *Anjur? Tennessee*.

OBS. Dr. Holbrook considers the two last as varieties of *H. platyrhinos*.

FAMILY CROTALIDÆ.

With poisonous movable fangs in the upper jaw; no other teeth in the upper jaw. A pit or fossa between the eye and nostril. Terrestrial.

OBS. In this State we have but two venomous serpents belonging to this family; and neither of them, except in the unsettled districts, are numerous.

GENUS TRIGONOCEPHALUS. *Oppel.*

Head large, triangular; covered with plates in front and on the vertex to behind the orbits, and beyond this with scales. A deep fosset between the eyes and nostrils. Body robust. Tail with plates, simple, unarmed; its plates occasionally divided.

THE COPPER-HEAD.

TRIGONOCEPHALUS CONTORTRIX.

PLATE IX. FIG. 18, A. SUMMIT OF THE HEAD. — (CABINET OF THE LYCEUM.)

Boa contortrix. LIN. Syst. Nat. 12 Ed. p. 373.

Angkistrodon mokeson. PAL. DE BEAUV. Am. Transact. Vol. 4, p. 381.

Cenchris contortrix. DAUD. Hist. Reptiles, Vol. 5, p. 358, pl. 50, fig. 25. (Head.)

Scytale cupreus. HARL. Med. and Phys. Res. p. 120.

Trigonocephalus contortrix. HOLBROOK, N. Am. Herpetology, Vol. 2, p. 69, pl. 14, Ed. prima; Vol. 3, p. 39, pl. 8, Ed. secunda.

Characteristics. Copper-colored. Reddish brown blotches over the back, dilated on the sides. Series of irregular rounded black blotches on each side of the abdominal plates. Length two to three feet.

Description. Body robust and thick, and covered with oblong hexagonal carinate scales; those on the flanks larger and smooth. The posterior part of the head covered with smooth oval scales, which become carinate on the neck. Head large and very distinct from the neck, (in the plate, the head is represented disproportionately small,) and flattened above. Rostral plate emarginate beneath; the two pair of frontal plates four-sided, the posterior pair largest; supra-orbital plate oblong, obscurely triangular, prominent over the eyes; vertical plate sub-pentagonal, with an acute process directed backwards, and separating the occipital pair. Rostral plate large, triangular. The fosset or pit lies between the second labial and one of the anterior orbitals. Mouth very large, with long yellowish white venomous fangs in the upper jaw. Abdomen wide and flat. Tail short, one-eighth of the total length, tapering rather suddenly, and ending in a solid horny tip: the caudal plates irregularly bifid; and this division occurs either at the commencement, middle, or more rarely near the end of the tail. Ventral plate wide, subquadrate.

Color. Above copper-brown, which is much brighter on the sides. Across the back are about sixteen reddish brown bands, bordered with dusky, and becoming irregularly dilated on the flanks. These bands or blotches may be traced also over the tail, which is dusky towards the tip; between these bands, are irregularly interspersed rounded spots of the same color. Beneath, the abdominal plates pale cupreous, with a series of about thirty-five large, rounded or subquadrate dusky blotches on each side, and alternating with each other. They become irregular, and more numerous towards the tail; occasionally a few dusky spots are interposed between these series, on the centre of the abdominal plates. Head somewhat brighter colored than the upper part of the body.

Abdominal plates,...	145 - 155.	Total length,....	25·0 - 36·0.
Caudal ditto,.....	35 - 45.	Ditto of tail,....	3·5 - 4·5.

The Copper-head is a vicious reptile, and its bite is justly dreaded. Its poison is considered as deadly as that of a rattlesnake; and an instance is recorded, where a horse, struck by one of these reptiles, died in a few hours. It has various popular names in different districts; the most common of these are, in this State, *Copper-head*, *Red Adder* and *Dumb Rattlesnake*. In other districts, it is called *Copper-belly*, *Red Viper*, *Deaf Adder* and *Chunk-head*. Its motions are sluggish; and when approached, it assumes a threatening aspect, raising its head and throwing out its tongue. It chiefly occurs in pastures and low meadow grounds, feeding on field mice, frogs, and the smaller disabled birds. Many vegetable antidotes have been proposed against the venomous bite of this and the rattlesnake, but they all seem to depend mainly upon their being infused in large quantities of fluid. Nothing is more effectual than scarifying extensively, and cupping the wound. When the parts cannot be reached, after the application of a ligature, sucking the wound, if long continued, is commonly sufficient, together with copious draughts of oil, milk, or even warm water. Arsenic is said to have been used with great success. In a paper in the *Medico-chirurgical Transactions*, this remedy, combined with cathartic clysters, and frictions of oil of turpentine and spirits of ammonia on the wound, is said to have cured four very bad cases arising from the bite of a serpent. The arsenic was given in this form: Two drachms of Fowler's solution, with ten drops of laudanum and half an ounce of lime juice, in peppermint, formed a dose taken every half hour. From six to eight doses of the solution was found to be sufficient. The debility which ensued was counteracted by continuing the remedies in gradually diminished doses. The *Prenanthes serpentina* or lion's-foot, the *Alisma plantago* or water plantain, and the *Hieraceum venenosum* or hawk-weed, have each had their vogue as remedies against this poison, but they can scarcely be depended on without the aid of the other remedies suggested above. An interesting series of experiments on the poison of the rattlesnake will be found in the *Medical and Physical Researches* of Dr. Harlan, to which we refer our reader.

Although the Copper-head is found in the western district of the State, yet I noticed them most numerous in the meadows of Columbia and Dutchess counties. Its geographical range extends from 45° north latitude to Florida. It does not seem to occur abundantly east of this

State; for I do not see it mentioned either in Hitchcock's Catalogue, or in the Report of Dr. Storer on the Reptiles of Massachusetts. Dr. Holbrook, however, has seen it in the neighborhood of Northampton, Massachusetts, and has received specimens from Vermont. It occurs in Ohio.

(EXTRA-LIMITAL.)

- T. piscivorus*. (HOLBROOK, Herpet. Vol. 3, pl. 7, of 2d Ed.) Dusky greenish brown tinged with yellow, with irregular black bands. Abdominal plates, 130; caudal, 40. Length one to two feet. *Toxicophis leucostomus* of Troost. North-Carolina, Louisiana.
- T. atrofuscus*. (Id. Vol. 3, pl. 9.) Scales smooth on the neck. Caudal plates: 25 subcaudal plates at the base, and 18 pairs of scales at the apex; black, varied with brown. Head black, bordered with grey; upper lip white. Abdominal plates, 133. Length two feet. Tennessee.

GENUS CROTALUS. Linneus.

Head large, triangular, rounded in front, and covered with plates only on its anterior part; vertex and occiput with scales. A deep pit or fosset between the eye and nostril. Upper jaw with poison fangs. Tail short and thick, ending in a rattle, which is a horny production of the epidermis. Caudal plates undivided.

OBS. This genus is peculiar to America.

THE NORTHERN RATTLESNAKE.

CROTALUS DURISSUS.

PLATE IX. FIG. 19. — (CABINET OF THE LYCEUM.)

Crotalus durissus. LIN. Syst. Nat. p. 372. HARLAN, Med. and Phys. p. 132.

C. confluentis? SAY, Long's Expedition, Vol. 1, p. 48.

Crotalus durissus. HOLBROOK, N. Am. Herpetology, Vol. 2, p. 81, pl. 17; and Vol. 3, p. 9, pl. 1, Ed. 2da.

The Banded Rattlesnake. STORER, Mass. Report, p. 233. KIRTLAND, Zoology of Ohio, p. 188.

Characteristics. Reddish brown or chesnut to black, with irregular rhomboidal black blotches. Abdominal plates, 173; caudal, 25. Length three feet.

Description. Body robust, and covered with elongate rhomboidal scales, distinctly carinate above, but less obviously so on the sides, although these latter are larger. Head large, triangular, obtusely pointed, flattened above. Rostral plate large, truncate above, triangular, with a quadrangular plate on each side; posterior to these a smaller plate, and in the suture between them are placed the nostrils. The superior orbital plates project strongly over the eye. A deep fosset or pit midway between the eye and nostrils, but on a lower plane. Throat with two very large plates. Neck small. Tail short, less than one-eighth of the total length.

Rattles varying in number, in general varying from five to twelve.* The *rattle*, as it is called, is composed of several horny enlargements loosely attached to each other, and resounding against each other when shaken.

Color. Usually yellowish brown, and occasionally bright chesnut red. I have seen some individuals in this State, of nearly a uniform brownish black. On the upper part of the head and neck, it is frequently of a lighter color, margined on each side with dusky. A series of black rhomboidal blotches, disposed in an angular form, extends along the back and over the sides; often a distinct reddish vertebral line. Caudal portion uniform dusky, and occasionally deep black. Beneath dull yellowish, with glossy reflections, and minutely and irregularly dotted and blotched with brownish black.

Abdominal plates,	170 - 177.	Total length,	36·0 - 48·0.
Caudal plates,	20 - 25.	Length of tail,	2·5 - 3·5.

As this species is found farther north than any other of the genus, I have ventured to designate it by the name of the *Northern Rattlesnake*, although it is found as far south as the Gulf of Mexico, and throughout the Western States, and to the base of the Rocky Mountains. Although furnished with such deadly weapons, the rattlesnake can scarcely be termed a vicious animal; for he rarely strikes, unless almost trodden upon. When suddenly disturbed, he throws himself into a coil, and warns the aggressor by rapidly vibrating his rattles; these can scarcely be heard beyond the distance of a few yards.† This is most usually the case, but they occasionally strike without the slightest warning. Some years since, I was at an Indian settlement in the western part of the State, when, as we passed through a thick undergrowth of bushes, one of the Indians was struck in this sudden manner; but as his legs were enveloped in thick leggings, the stroke was harmless. The other Indians immediately hunted down and killed the reptile. They assured me, that whenever a rattlesnake sprung his rattle, it was a sign that he himself was alarmed, and that in such cases they invariably spared his life. It is a popular but erroneous belief, that a rattle is added each year. This is controverted by Dr. Holbrook, who has known two rattles added in one year, and Dr. Bachman has observed four produced in the same period. The upper jaw is furnished with long curved acute and hollowed fangs, which are replaced by others in the rear when broken off. A poison bag, which occupies the whole length of the jaw beneath the skin, communicates with these fangs at their bases. At the moment the snake strikes, he ejects the venom forcibly into the

* In the *Columbian Magazine* or *Monthly Miscellany* for November, 1786, is figured and described the tail of a rattlesnake, with an almost incredible number of rattles. "The common number of fibulæ seldom exceeds fourteen or fifteen in a rattle; but the one given (fig. 4) is certainly a very great curiosity, even to a person who has seen a great number of this genus of snakes. The fibulæ are forty-four in number. The snake from which this rattle was taken, was not, as might be expected, of a size proportionate to the prodigious length of its rattle, but rather a middling sized snake. It was killed some time in the summer of this year, at Fort Allen." The greatest number ever seen by Dr. Holbrook, as he has assured me in conversation, was twenty-one.

† At the commencement of the War of Independence, the naval flag of Massachusetts displayed a Pine Tree, at the root of which was a coiled Rattlesnake, with the words "Don't tread on me!" or sometimes "Caveant moniti!" Let those who are warned beware! This was rather more appropriate than the ornithological monster who brandishes arrows and olive branches on our present armorial bearings.

wound. In an instance of a very large rattlesnake from Florida (the *C. adamanteus*), which was irritated, he struck violently against the iron wire on the side of the cage, and ejected the venom to the distance of three feet. The absurd notion of fascination is entertained by few at the present day : it is alluded to under the article Copper-head.

The Rattlesnake is common in various parts of the State, and in the northern States generally appears to prefer rocky situations. They abound in Clinton, Essex and Warren counties, along the shores of Lakes Champlain and George. Some idea may be formed of their numbers in certain districts in this State, by the following extract from the Clarion newspaper published in Warren county : "Two men, in three days, killed eleven hundred and four rattlesnakes on the east side of Tongue mountain in the town of Bolton. Some of the reptiles were very large, carrying from fifteen to twenty rattles. They were killed for their oil, or grease, which is said to be very valuable."

Although numerous in the rocky mountainous districts of this State, they are rare or entirely wanting in those elevated regions which give rise to the Moose, the Raquet and the Hudson rivers. They are found in the counties of Sullivan, Ulster, Orange and Greene. A few still linger in the swamps of Suffolk county.

It is a popular belief that hogs are particularly destructive to these reptiles. This may be true to a certain extent ; but neither their bristly hide, nor their thick teguments, afford them perfect immunity from the stroke of this serpent. I was informed by a respectable farmer in Dutchess county, that he lost three hogs in one season by the poison either of the copper-head or rattlesnake. The more probable explanation is, that the rattlesnake gradually disappears, and is finally extirpated, before the progress of cultivation.

The *C. horridus*, which frequently appears in the list of our reptiles, is not found in North America.

(EXTRA-LIMITAL.)

C. adamanteus. (HOLBROOK, Herpet. Vol. 2, pl. 16; and Vol. 3, pl. 2, Ed. 2da.) Very large. Dusky brown, with rhomboidal dark spots margined with grey. Length six to eight feet. *Carolina, Florida*.

C. oregonus. (Id. Vol. 3, pl. 3.) A broad white bar between the orbits, and two others on each side of the head. Back with two white zigzag lines. Abdominal plates, 177; subcaudal, 22. *Oregon*.

Genus CROTALOPHORUS, Gray. Head covered with plates above. Rattles few in number, and not much developed. Subcaudal plates mostly entire.

C. miliarius. (HOLBROOK, Vol. 2, pl. 15; and Vol. 3, pl. 4, Ed. 2da.) Small. Grey, with a dorsal yellowish stripe, on which is a series of large black spots margined with yellowish white. Length 12 - 14 inches. *Carolina, Michigan, Louisiana*.

C. tergeminus. (Id. Vol. 3, pl. 5, Ed. 2da.) Ash brown, with a triple row of brown spots bordered with lighter. Sides spotted with alternate fuscous series. Length two feet. Allied to *miliarius*. *Western Territories*.

C. kirtlandi. (Id. Vol. 3, pl. 6.) *Massasagua*. Black, varied slightly with brown. A series of light brown rings on the back, and vertical lines on the flanks. Abdominal plates, 152; caudal, 27, bifid 2. Length 27 inches. *Michigan*.

FAMILY ELAPSIDÆ.

With venomous fangs, and permanently fixed; other teeth in the upper maxillary, and on the palate. Head not distinct from the body. Jaws not dilatable. No fosset between the eye and nostril.

Genus *ELAPS*. *Schneider*. Head scarcely larger than the body; no fosset between the eye and nostril; upper jaw with a fixed and permanently erect poison fang. Resembles *Coluberidæ*.

E. fulvus. (HOLBROOK, Herpet. Vol. 2, pl. 18.) Red, encircled with broad black bands bordered with yellow. Abdominal plates, 212; caudal, 32. Length twenty inches. *Carolina, Louisiana, Upper Missouri.*

CLASS IV. AMPHIBIA.

MORE OR LESS DISTINCTLY VERTEBRATED. WITH COLD RED BLOOD. HEART UNILOCULAR, OR WITH ONE AURICLE AND ONE VENTRICLE. EXTREMITIES FOUR, TWO OR NONE; OCCASIONALLY DISAPPEARING WITH AGE. SKIN NAKED, DESTITUTE OF SCALES. RIBS SHORT OR WANTING. RESPIRATION BY GILLS OR LUNGS, OR BOTH CO-EXISTENT. FORM IN SOME FAMILIES UNDERGOES A COMPLETE METAMORPHOSIS. AQUATIC OR TERRESTRIAL. CARNIVOROUS. EGGS IMPREGNATED AFTER EXCLUSION.

The *Amphibia* or *Amphibians* have, until recently, been treated as an order of *Reptiles*; but they present so many and such important variations from the character assigned to that class, that modern naturalists have almost unanimously agreed to consider them a distinct class, forming a group allied on the one hand to the *Reptiles* by the *Cæcilidæ*, and on the other to the *Fishes* by the *Sirenidæ*.

As early as 1816, De Blainville published a system of classification, which he had publicly taught in his lectures for several years previous. In this he indicated the propriety of separating the animals under consideration from the *Reptiles*. Of these he made a class, which he designated as *Nudipellifères* or *Ichthyoides nuds*. This he divided into four orders: 1. *Batraciens*, Frogs; 2. *Pseudosauriens*, or Salamanders; 3. *Amphibiens*, as Proteus, Siren, &c.; 4. *Pseudophydiens*, as *Cæcilia*. This was afterwards modified and enlarged in his "Principes d'Anatomie Comparée," published in 1822, when he designated his third class under the name of *Subichthyens*.

The characters assigned to this class must be taken with some limitations. Some of the genera undergo no metamorphosis whatsoever, either in form or respiration; at least none has hitherto been observed. Nor is the phrase "unilocular heart" literally exact; for although the auricle is externally single, yet dissections have proved that internally it is in some genera separated into two distinct auricles.

The *Amphibians* present such a variety of changes, and such modifications of structure, as to have given rise to many systematic arrangements. From the various systems proposed, we select that of Mr. Bell, as detailed in his admirable work on the *British Reptiles*, with such modifications as are necessary to produce uniformity with the general plan of this Report.

FAMILY RANIDÆ.

Body short and broad. Feet (in the young) wanting; afterwards four, the hind ones long, formed for leaping and swimming. Tail (in the young) long, compressed; afterwards wanting. No ribs; vertebræ few. Tympanum open. Respiration at first aquatic by gills, afterwards atmospheric by lungs. Gills at first external, but withdrawn within the chest before the metamorphosis. Impregnation after the exclusion of the eggs.

This family corresponds with a part of the order *Caducibranchia* of Bonaparte, and entirely with the order *Anoura* of Bell. It also agrees with the family *Ecaudata* of Oppel, the order *Salicuria* of Merrem, and a part of the order *Mutabilia* of Gray.

GENUS RANA. Linneus.

Upper jaw with a row of minute teeth; a transverse interrupted row in the middle of the palate. Tongue large, fleshy, notched behind, where it is alone movable. No post-tympanal glands. Hind legs long, palmated; four toes before, five behind. YOUNG, with elongated bodies, and gills; without feet, and with a long compressed tail.

THE BULLFROG.

RANA PIFIENS.

PLATE XIX. FIG. 48. — (STATE COLLECTION.)

Rana pipiens. LIN. Syst. Nat. LATREILLE, Hist. Nat. Rept. Vol. 2, p. 153.

R. id. HARL. Med. & Phys. Res. p. 101.

R. scapularis, (young.) ID. Ib. p. 103.

R. mugiens. DUMER. & BIBRON, Vol. 8, p. 370.

R. pipiens. HOLBROOK, N. Am. Herpetology, Vol. 3, p. 81, pl. 15; and Vol. 4, p. 77, pl. 18, 2d Ed. STORER, Mass. Rep. p. 235.

Characteristics. Large. Head green; body greenish olive, with dusky blotches; legs spotted or barred. Length 6 to 12 inches.

Description. Body robust, smooth. Head very large. Nostrils lateral, very small, midway between the snout and orbits. Eyes large and prominent. Tympanum large and rounded, resembling a scale attached to the side of the head. Mouth large, with numerous minute acute teeth in the upper jaw. Tongue large and fleshy. Fore feet short, robust, with four short toes; the one next to the exterior longest; all with small tubercles at the joints. Hind legs long, more than twice the length of the fore legs. Under surface of the thighs partly granulated. Toes largely webbed, with tubercles at the joints; the one next to the exterior, longest.

Color. Body dusky with a greenish hue, and varied with irregular darker blotches. Head green above; throat yellow or yellowish white; lower jaw white; upper jaw green. Pupil

of the eye black ; irides green. Tympanum green, with an outer circle of brown. Abdomen yellowish white. Fore legs greenish brown above, with dusky spots occasionally assuming the form of transverse bars. Hind legs brownish or dusky green above, yellowish white beneath, with obscure irregular dusky bars, or spotted with the same.

Length of the body, 4·0 – 12·0.

Ditto of hind legs, 2·5 – 7·0.

The Bullfrog is one of the largest of the family in this State, and appears to be generally distributed throughout the Union. It is well known by its hoarse voice, compared by many to the roaring of a bull, and which is so loud as to be heard at a great distance. It is entirely aquatic, although it occasionally comes to land. In the adult state, it feeds on insects, crawfish, helices, and small fish. The Tadpole, on the other hand, appears to be exclusively herbivorous. I have noticed this species some distance below Montreal, and I think in the vicinity of Trois Rivières. With its southern limits I am unacquainted. It occurs in Ohio.

THE LARGE NORTHERN BULLFROG.

RANA HORICONENSIS.

PLATE XXII. FIG. 62.

Rana horiconensis. HOLBROOK, N. Am. Herpetology, Vol. 3, p. 91, pl. 18 ; Vol. 4, p. 83, pl. 19, 2d Ed.

Characteristics. Dark olive, with irregular black blotches. A longitudinal cuticular fold on each side. Length three to four inches.

Description. Body very stout, with an elevated cuticular fold running from the orbits on the sides of the posterior extremities. Nostrils small, lateral, and placed nearer the snout than to the orbits. Eyes large and prominent. Tympanum large, circular. Fore legs robust, four-toed. Hind legs much longer, the posterior part of the thigh granulated ; five-toed, and fully palmated.

Color. Body dark olive brown, varied with irregular black spots above ; silvery white beneath. An indistinct bluish band extends from near the snout, under the tympanum, to the shoulders. Chin and throat white. Fore legs dusky above. Hind legs dark olive, with narrow dusky bars. Pupil black ; iris golden, reticulated with black. Length 3·5.

For a knowledge of this species we are indebted to Dr. Holbrook, who obtained his specimens from Lake George in this State. The Indian name of that lake (*Horicon*), suggested the trivial name. I saw them in great numbers in the lakes emptying into the Raquet river, but until I met with Holbrook's description, had supposed them to be varieties of the preceding. To this it is closely allied in size, voice and habits ; but its cuticular fold is a strong distinctive mark. Its note is more sonorous, and in a lower key. It is believed to be strictly a northern species. The *melanota* of Harlan, appears closely allied. Dr. Harlan, it would seem, never saw the species, and the author he cites is utterly unworthy of credit.

THE SPRING FROG.

RANA FONTINALIS.

PLATE XXI. FIG. 54, A.

Rana fontinalis. Common Spring Frog. LE CONTE, Ann. Lyc. Vol. 1, p. 282.*R. flavi-viridis*, var. HARLAN, Am. Jour. Vol. 10; Acad. Sc. Vol. 5, p. 338.*R. id.* HARLAN, Med. and Phys. Res. p. 103 and 220. SMITH, Hitchcock's Catalogue, p. 14.*R. fontinalis*. HOLBROOK, N. Am. Herp. Vol. 3, p. 85, pl. 16; and Vol. 4, p. 87, pl. 21 of 2d Ed. STORER, Mass. Rep. p. 237.

Characteristics. Bright green, with obsolete dark-colored spots on the flanks; throat yellow. Beneath white. Length 3 - 4 inches.

Description. Body robust. Snout somewhat obtusely pointed. Orbits very prominent. Tympanum large, suboval, with a central elevation. Skin smooth on the dorsal and abdominal surfaces, obsoletely granulated on the sides. On each side of the back is a strong cuticular fold, extending from the posterior part of the orbit, touching the upper margin of the tympanum, and reaching to the posterior part of the body.

Color. Brilliant green above, which also extends with a somewhat darker shade over the posterior parts of the body, and the outer parts of the extremities. Belly pearly white. Throat yellow, somewhat passing into orange. Tympanum chesnut or chocolate-brown, the central elevation green. Thighs obscurely barred with black, or in their place interrupted series of dusky spots. Buttocks and posterior part of the thighs mottled with black. Irides golden, with a bright yellow ring.

Length 3.0 - 4.0.

The Spring Frog is one of our commonest species, and is that usually eaten as a delicacy. It lives in the vicinity of clear pools and running streams, and leaps into them when disturbed. It feeds upon water insects, and such others as may approach its neighborhood. It is one of the earliest that appears in spring. In its geographical range it must be considered as a northern species, being found in all the northern and middle States. Dr. Holbrook informs me that it is not found south of Virginia.

THE MARSH FROG.

RANA PALUSTRIS.

PLATE XXII. FIG. 60. — (STATE COLLECTION.)

Rana palustris. LE CONTE, Ann. Lyc. Vol. 1, p. 282.*R. pardalis*. HARLAN, Am. Jour. Vol. 10, p. 50.*R. palustris*. ID. Ac. Sc. Vol. 5, p. 339; Med. and Phys. Res. p. 104 and 222.*R. id.* HOLBROOK, N. Am. Herpetology, Vol. 1, p. 93, pl. 14; and Vol. 4, p. 95, pl. 23 of 2d Ed.*Pickerel Frog*. STORER, Mass. Report, p. 238.

Characteristics. Four rows of dark quadrate spots on the back and sides. Under sides of the thighs yellow. Length three inches.

Description. Head short; snout obtusely rounded. Nostrils equidistant between the eyes and snout. Eyes large and prominent. Tympanum small, rounded and polished. Buttocks granulated. Joints of the toes with fleshy tubercles.

Color. This appears to vary considerably with age: In the young, the general color of the upper part of the body is frequently of a brilliant golden green; the adult is usually pale brown. The spots along the back vary with age from rufous brown to deep black; these are more or less of a quadrate form, and larger than the row on the sides, which are often rounded. The spots of the dorsal series become occasionally confluent, producing a dark longitudinal band on each side. A dusky line, more or less obvious, proceeds from the eye to the snout; other lines parallel with this on the sides of the head. A greenish or yellow longitudinal line proceeds from the orbit to the posterior part of the body on each side, separating the dorsal from the lateral series. Tympanum of the general color of the body. Beneath soiled white, or tinged with yellow, which increases in intensity towards the tail. Fore legs short, brownish, with dark subocellate spots. Posterior extremities yellow beneath, brown or rufous above, with twelve to thirteen black annular bands margined with lighter; these bands are more usually uniform dusky greenish or brown. Similar, but oblique bands or spots on the fore legs. Eyes black, with a golden lustrous ring.

Length 2.0 - 3.0.

This is one of our most beautiful frogs, and is remarkably active. It has a strong and disagreeable odor; and from being used as bait, it is called, in various districts, *Pickrel Frog*, and also *Tiger* and *Leopard Frog*. It occurs along salt marshes, and in wet meadows near ponds and streams. I observed it in the most elevated regions in the northern part of the State.

Its geographical range, along the coast, extends from Maine to Virginia. Westward, it has been noticed in Ohio.

THE SHAD FROG.

RANA HALECINA.

PLATE XX. FIG. 49. — (CABINET OF THE LYCEUM.)

Rana halecina, Kalm. DAUDIN, Hist. Rept. Vol. 8, p. 122.

Shad Frog. BARTRAM, Travels, p. 274.

R. halecina. HARLAN, Ac. Sciences, Vol. 5, p. 337; Med. and Phys. Res. p. 102, and p. 224.

R. id. HOLBROOK, Herpetology, Vol. 1, p. 89, pl. 13; and Vol. 4, p. 91, pl. 13, 2d Ed. STORER, Mass. Rep. p. 237.

Characteristics. Green, with dark brown ovate spots bordered with yellow; beneath yellowish white. Length three to four inches.

Description. Head small, obtusely rounded in front. Eyes prominent. Upper part of the body roughened by several cuticular folds; posterior part of the thighs granulated. Tympanum large, plane, circular. Toes palmated. Fingers distinct; the thumb of the male with a distinct tubercle. Posterior extremities scarcely twice the length of the head and body; the fourth toe exceedingly long.

Color. Brassy or bronze green above. Orbits above, with an oval black spot. On the dorsal surface, two series of large irregular roundish dark olive spots, margined with yellow; these spots are occasionally confluent. A bronzed or yellow stripe on each side, proceeds from the eye to the posterior extremity; another yellow stripe extends from the eye to the angle of the mouth. The thighs and legs with dark olive oblong transverse patches, resembling bands. A few oblique dark oblong bars on the fore legs. Tympanum bronzed; yellowish in the centre. Beneath silvery, becoming tinged with yellow on the abdomen. Eyes black, with a golden ring.

Length, 3.0 – 4.0.

This beautiful species is extensively distributed over the whole Union. It abounds in moist places, and feeds chiefly on insects. From its simultaneous appearance in the spring with our common Shad (*A. sapidissima*), it is frequently called *Shad Frog*. In Massachusetts, they are better known under the name of *Leopard Frogs*. The Swedish colonists named them *Sill-hoppetusser*, or *Herring-hoppers*, from their appearance at the commencement of the herring season; and this, we presume, suggested the latin trivial name.

THE WOOD FROG.

RANA SYLVATICA.

PLATE XXI. FIG. 54. ADULT. — PLATE XX. FIG. 50. YOUNG. — (STATE COLLECTION.)

Rana sylvatica. LE CONTE, Ann. Lyceum, N. Y. Vol. 1, p. 282.

R. pensylvanica. HARLAN, Am. Jour. Vol. 10, p. 60.

R. sylvatica. ID. Med. and Phys. Res. p. 221.

R. id. HOLBROOK, N. Am. Herp. Vol. 1, p. 95, pl. 15; and Vol. 4, p. 99, pl. 24, 2d Ed. STORER, Mass. Rep. p. 239.

Wood Frog, R. Sylvatica. KIRTLAND, Zoology of Ohio, p. 190.

Characteristics. Reddish brown; a dark dilated stripe from the snout through the eye, and including the tympanum. *Young*, olive brown or green. Length two and a half inches.

Description. Body slender. Head small; nose obtusely rounded. Eyes large and prominent; tympanum small, circular. Thighs granulated behind. Posterior extremities twice the length of the head and body, palmated.

Color. Reddish brown above, resembling in color a withered leaf; this color is bounded on each side by a yellow and often interrupted narrow line from the orbits to the posterior extremity of the body. Flanks mottled with greenish and yellow. A dark brown band proceeds from the snout, and dilating backwards, includes half the eye and all the tympanum; this band is bordered below with a light yellowish line. Fore legs reddish brown, with obscure darker blotches. Hind legs of a similar color above, with two or more distinct transverse dark bands; beneath soiled white. Under side of the extremities light brown.

Young. Olive brown, verging on green above; the lateral stripe yellow, margined with interrupted black lines; the ocular stripe black, bordered beneath with white. Thighs, legs and tarsus barred with black; palms reddish. Beneath pure white.

Length 2.5.

This small species can at once be recognized in the woods by its amazing and quickly repeated leaps, which render its capture difficult.

It occurs from Massachusetts to Virginia, and is smaller than the Marsh Frog. It is said by some authors to be confined to the Atlantic States in its range; but we learn from Dr. Kirtland, that they are so abundant in the woods in Ohio, that it is almost impossible to move without stepping on them. It is allied to the *R. temporaria* of Europe, but is smaller, with the head less pointed and tympanum smaller.

(EXTRA-LIMITAL.)

R. clamitans. (HOLBROOK, Vol. 3, pl. 17; and Vol. 4, pl. 20, 2d Ed.) Slender. Reddish brown above, darker behind, silvery white beneath; upper jaw green. Lateral cuticular folds. Length three inches. *Carolina, Georgia.*

Genus *CYSTIGNATHUS*, *Wagler.* A sub-gular vocal vesicle, communicating with the mouth on each side of the tongue. Fingers and toes all distinct. Tympanum very small.

C. ornatus. (HOLBROOK, Vol. 1, pl. 16; and Vol. 4, pl. 25, 2d Ed.) Small. Dove-colored above, with oblong spots of dark brown, margined with yellow. Toes not palmate; the two outer united at the base. *South Carolina.*

C. nigrinus. (Id. Vol. 3, pl. 19; and Vol. 4, pl. 26, 2d Ed.) Small. Olive brown; an interrupted black vertebral line, with blackish blotches along the sides; legs barred; upper lip white. Length $1\frac{1}{2}$ inches. *Carolina, Georgia.*

Genus *ENGYSTOMA*, *Fitzinger.* Body oval, and covered with a smooth skin. Head small, pointed; mouth minute. Tongue long, only movable behind. Jaws and palate without teeth. No parotids; tympanum concealed. Fore legs with four, hind legs with five toes not palmated.

Obs. The animals of this genus bear a general resemblance to the Frog. Only one species has been as yet observed in the United States. Dr. Holbrook thinks it possible that a species may be found in this State, for he has heard its peculiar noise in the neighborhood of New-York; and Major Le Conte informs me that he has seen a species of *Engystoma*, said to have been found in a sandy district of this State.

E. carolinense. (HOLBROOK, Vol. 1, pl. 11.) Chesnut above, and thickly mottled with blackish specks beneath. *South Carolina.*

GENUS SCAPHIOPUS. *Holbrook.*

Body short, thick swollen. Head short. Minute teeth in the upper jaw and on the palate. A small parotid gland behind the ear, from which a watery fluid can be pressed. Posterior extremities short, stout and muscular. Legs shorter than the thigh. A spade-like horny process occupies the position of a sixth toe, and is used by the animal in excavating.

HERMIT SPADE-FOOT.

SCAPHIOPUS SOLITARIUS.

PLATE XIX. FIG. 47. — (STATE COLLECTION.)

Scaphiopus solitarius. HOLBROOK, N. Am. Herpetology, Vol. 1, p. 85, pl. 12.*Rana holbrookii.* HARLAN, Med. and Phys. Researches, p. 105.

Characteristics. Ash grey, with two yellow curved lines from the eyes, dilated, and subsequently united at the vent. Length two inches.

Description. Head short, obtuse. Nostrils subterminal. Eyes very large, and placed in very prominent orbits. Tympanum small, and behind it a small parotid gland, which upon pressure exudes an acrid fluid. Fore feet long, four-toed; posterior with five toes, and a long black horny process on the metatarsus.

Color. Back ashen grey, passing into dark brown, with dark brownish and reddish tubercles on the flanks. Irides golden; and in a modified light, the iris is seen divided into four parts by a vertical and horizontal line, giving a lozenge shape to the black pupil. Tympanum dull yellow. From the eye on each side there runs a yellowish line, punctate with black, approaching each other, then diverging in a curved direction, and finally uniting on the rump; the position of these two lines resembles the outline of the antique lyre. A bar of a similar color, but interrupted on the flanks. Coccyx with a broad longitudinal yellow stripe. Upper surfaces of the extremities brown, with yellowish blotches. Body beneath greyish white.

Length, 2.0. Breadth of the head, 0.7.

This singular animal, whose structure is so remarkable as to have required a separate genus, was first detected by our eminent Herpetologist, Dr. HOLBROOK. With the teeth of a Frog, and parotid glands of a Toad, its natural place is between these two genera. It was first detected in South-Carolina, and subsequently found in Tennessee, and its geographical range was considered to be quite restricted. We have now the pleasure to include it in the Fauna of New-York. Specimens of this animal were found by Mr. Hill, in a garden near Clarkstown, Rockland county. It lives in small holes, in damp earth, a few inches below the surface, which it excavates with great ease by means of its spade-like processes. In these holes it lies in wait for such insects as may approach, and I suspect can spring forth to seize whatever may be passing incautiously near its hiding place. I remarked, at least in those which I had alive, that it leaped with great apparent ease to a considerable distance. To

judge from those in my possession, although completely identical with the *solitarius*, I should be disposed to believe that our northern variety is less brilliant in its markings, and its general color is of a more grave and sombre hue. Dr. Pickering, I learn, has recently seen it in the neighborhood of Salem, where they appear in great numbers, at distant periods, after rains of long continuance.

GENUS BUFO. *Laurenti*.

Body thick swollen, covered with warts or papillæ. Jaws without teeth. Behind the ear a large glandular tumor, having visible pores. Head short. Posterior extremities but slightly elongated.

THE COMMON AMERICAN TOAD.

BUFO AMERICANUS.

PLATE XIX. FIG. 46. YOUNG. — PLATE XX. FIG. 52. ADULT.

Bufo americanus. LE CONTE, Cat. in McMurtrie's Trans. of Cuvier's Règne Animal.

B. musicus. HARLAN, Ac. Nat. Sc. Vol. 5, p. 344 (excl. syn.); Med. and Phys. Res. p. 109.

B. americanus. HOLBROOK, N. Am. Herpetology, Vol. 1. p. 75, pl. 9; and Vol. 5, pl. 4, 2d Ed.

The Common Toad. STORER, Massachusetts Report, p. 244. KIRTLAND, Zoology of Ohio, p. 168.

Characteristics. Body moderately verrucose. Post-tympanal gland long and narrow. Posterior toes semipalmate. Greyish mottled with dusky, and dark bars across the feet. Length three inches.

Description. Body corpulent, covered with numerous reddish warts irregularly distributed; granular beneath. Head short, but wide; channelled above by the prominence of the superciliary ridges. Eyes large and prominent; the eyelids tuberculated. Nostrils small, rounded, and nearer to the nose than the eyes. Parotids prominent, tuberculated, reniform. Fore feet with four short free toes. Hind feet with its five toes connected at their bases. Inner toe shortest; thence gradually increasing in length to the penultimate, or second from the outer toe: a large tubercle beneath.

Color. This is subject to many variations, dependent upon age, season, scanty or abundant supply of food, and even varies at the will of the animal. It may be described generally as grey brown or ash, with irregular but well defined dark blotches, and a pale ash dorsal stripe extending from between the eyes to the posterior part of the body. Eyes black; irides varied with yellow and black. On the extremities are dark brown bars, extending over the toes. Beneath soiled white. *Young*, at first dull reddish brown, but by the end of the season become mottled and barred as in the figure. There is a variety occasionally found of a bright red or brick-dust color, but which in other respects resembles this species.

Length 2 - 3 inches.

The habits of this animal are somewhat nocturnal; coming out of its hole in the dusk of the evening, and hopping about in search of food. I have also noticed it during the day time, crouched in a shallow cavity, with its body so much depressed as to appear nearly orbicular, and apparently on the look-out for its prey. Although according to our notions of beauty he is considered to be a disgusting looking animal, yet we are not to overlook his value in diminishing the number of noxious insects; and I have been assured that his flesh is as delicate an article of food, as the frog itself. It is a timid, inoffensive, and entirely harmless animal, and has even been domesticated. The popular belief in its poisonous properties, is unfounded. There is, it is true, an acrid secretion from the follicles of the skin, which may serve as a protection against some of its enemies. Dr. Davy supposes that it may be excrementitious, carrying off a portion of carbon from the blood, and thus be auxiliary to the functions of the lungs. They live upon insects, earthworms, etc., which they always seize when in motion, refusing to touch any dead food. In their turn, they are preyed upon by the larger reptiles, especially by the two striped snakes and the other species. Like the frog, its young are developed in water, and pass through the tadpole state; and it is also furnished with a sac for holding the water obtained through the cutaneous absorbents. It sheds its skin at certain intervals, and according to the observations of Mr. Bell, swallows it as soon as it is detached.

Dr. Holbrook informs me that he has seen this species as far north as the River Saco, New-Hampshire, and probably it will be found still farther. Its southern and western limits appear to be defined by the hilly regions, as contradistinguished from the alluvial lands bordering on the Atlantic. Kirtland notices it in Ohio.

(EXTRA-LIMITAL.)

- B. lentiginosus.* (HOLBROOK, Vol. 1, pl. 9; and Vol. 4, pl. 1, 2d Ed.) Upper jaw emarginate; lower with a process in front. Head large; superciliary ridge much elevated. Rufous brown. Length three inches. *Southern States.*
- B. erythronotus.* (Id. Vol. 3, pl. 21; and Vol. 5, pl. 2, 2d Ed.) Brickdust color above; yellowish white beneath. Head short, rather pointed. Length one and a half inches. *South Carolina.*
- B. quercicus.* (Id. Vol. 5, pl. 3, 2d Ed.) Very small. Head short, pointed; superciliary orbits slightly elevated. Body very flat, rounded at the flanks. A yellowish vertebral line. Length 0.75. *Carolinas.*
- B. cognatus.* (Id. Vol. 5, pl. 5.) Channelled posteriorly between the orbits, but effaced in front. A vertebral line, and oblique lateral yellowish lines. Foot with a spade-like process. Length three inches. *Upper Missouri.*

GENUS HYLODES. *Fitzinger.*

Teeth in the upper maxillary, and palatines. A tympanum. Extremities slender. Tips of the fingers and toes terminating in slightly developed tubercles. Mouth with a large subcordiform tongue. No bony sternum.

Obs. This genus comprises several small species, and is intermediate between *Rana* and *Hyla*, partaking of the habits of both.

PICKERING'S HYLODES.

HYLODES PICKERINGI.

PLATE XX. FIG. 51.

Hylodes pickeringi. HOLBROOK, N. Am. Herpetology, Vol. 4, p. 135, pl. 34.

H. id. Essex Nat. Hist. Society, Vol. 1.

Pickering's Hylodes. STORER, Report on the Reptiles of Massachusetts, p. 240.

Characteristics. Reddish brown or blackish brown; two angular dusky lines above; hind legs barred with dusky. Length one inch.

Description. Body somewhat ventricose, with its surface slightly granulate. Head triangular, obtusely pointed. Granulated beneath on the belly and thighs. Fore legs half the length of the head and body. Thigh and tibia slightly exceeding the tarsus and toes, and equalling in length the head and body. Tongue fleshy, retractile. A row of exceedingly minute teeth in the upper jaw, and similar ones in two rounded patches in the middle of the palate.

Color. This varies apparently at the will of the animal. One which I kept for several days, presented constantly the following appearances: Color of the head, body and legs above a light reddish brown, tinged with yellowish on the side; upper lip yellowish white; a dark triangular spot on the back part of the head. Irides golden; pupil black. On the anterior part of the back, two angular dusky lines *en chevron*, touching at their apices, and forming the figure of a cross; posterior to this, another angular mark across the back; a dusky blotch on the posterior part of the body; a dark lateral stripe on the side. Thighs and legs with broad dusky bands; a dusky longitudinal line on the fore and hind legs, separating the two colors above and beneath. Beneath dull whitish, with numerous black dots sprinkled on the yellowish throat. At other times the general color is a uniform dark brown, with the markings on the upper part of the body as described above, deep black.

Length of head and body, 1.0.

To the ends of the toes, 3.0.

This species is common in the neighborhood of New-York, and is frequently found on indian corn, grape vines, and also in green houses, under the leaves of plants during the heats of

summer: feeds on small flies. Its present known geographical range is from Massachusetts to Pennsylvania.

THE CRICKET HYLODES.

HYLODES GRYLLUS.

PLATE XXII. FIG. 61. — (CABINET OF THE LYCEUM.)

Rana gryllus. LE CONTE, Ann. Lyc. Nat. History, Vol. 1, p. 282.

R. id. HARLAN, Acad. Nat. Sc. Vol. 5, p. 340.

R. dorsalis. ID. Med. and Phys. Res. p. 105.

Acrys gryllus. DUM. et BIBRON, Hist. Nat. Rept. Vol. 8, p. 507.

Hyla gryllus. HOLBROOK, N. Am. Herpetology, Vol. 3, p. 75, pl. 13.

Hylodes gryllus. ID. Ib. Vol. 4, p. 131, pl. 33, 2d Ed.

Characteristics. Cinereous, with a green or red vertebral line, and two or three black blotches bordered with white. Head green above. Length one and a half inches.

Description. Body slender. Head somewhat elongated. Eyes large and prominent, the supra-orbital ridge being much elevated. Nostrils lateral, midway between the orbits and snout. Fore feet small, with slender fingers, which are slightly enlarged at their tips. Hind legs nearly twice the length of the body, with five long slender palmated toes.

Color. Head greenish above, with a black triangular spot between the orbits. Irides golden above, blackish beneath; pupil black. Body dusky above, with a greenish or reddish line extending backward to the vent; this becomes bifurcated in front, a branch being directed to each orbit. The blotches on the sides are dusky or blackish, obsoletely bordered with white. Thighs yellowish behind, with a few semi-bars of brown. Beneath silvery white.

Length 1.0 – 1.2.

This species is known under the names of *Peeper* and *Cricket Frog*, in New-York. At the South, it is called *Savannah Cricket*. It is very lively and noisy, frequenting moist wooded places and the borders of ponds, and is often seen on aquatic plants. It was first distinctly indicated by Major Le Conte, who regarded it as a true Frog. I have followed Dr. Holbrook, in arranging it under *Hylodes*. It is never found on trees, and cannot adhere to the under side of smooth surfaces.

(EXTRA-LIMITAL.)

H. ocularis. (HOLBROOK, Vol. 3, pl. 14; and Vol. 4, pl. 35, 2d Ed.) Very small. Reddish brown; a black band from near the end of the snout, runs through the eyes and along the flanks. Length three quarters of an inch. *South Carolina, Georgia*.

GENUS *HYLA*. *Laurenti*.

Body somewhat tapering. Teeth in the upper jaw and palate. A tympanum. No parotids. Fingers long, and with the toes terminating in rounded viscous pellets. Males with a vocal vesicle.

Obs. The skin above, in most of the American species, is smooth.

THE NORTHERN TREE-TOAD.

HYLA VERSICOLOR.

PLATE XXI. FIG. 53, A. — (STATE COLLECTION.)

Hyla versicolor. LE CONTE, Ann. Lyc. Nat. Hist. Vol. 1, p. 281.

H. id. HARLAN, Acad. Nat. Sc. Vol. 5, p. 343. ID. Med. and Phys. Res. p. 108.

H. id. HOLBROOK, N. Am. Herp. Vol. 1, pl. 17; and Vol. 4, p. 115, pl. 28, 2d Ed. STORER, Mass. Rep. p. 241.

Characteristics. Broad. Leg shorter than the thigh. Grey. Small warts above; granulate beneath. Posterior parts of the thighs bright yellow. Length two inches.

Description. Body robust and broad, covered with numerous small warts. Head broad, and terminating in a blunt snout. Fore feet with four toes terminating in rounded pellets; the internal toe shortest. Hind feet with five toes terminating in the same manner, but semi-palmate. Under side of the body and thighs granulate. Eyes large and prominent.

Color. This varies, as is well known, at the will of the animal, from grey to green. The more usual color is ash above, with a dusky acute-angled cross made up of irregular blotches, which also extend over the sides of the body and across the extremities. Eyes with black pupils and golden irides. Beneath whitish; the chin speckled with cinereous. Legs beneath yellowish; posterior part of the thighs yellow, barred with black.

Length 2.0.

This is universally distributed through the State, and is a northern species. The surface is covered with a viscid acrid secretion, which, as in the case of the common toad, has led to the popular belief in its being poisonous. It lives almost exclusively on trees; and during damp weather, it is particularly clamorous. It feeds on insects. I have been assured by many credible persons that it possesses ventriloquial powers in no inconsiderable degree, and often deceives the most attentive observers. This, together with its faculty of assimilating its color with that of the tree on which it rests, renders its capture very difficult. Extends from Maine to Virginia, and is also found in Tennessee and Ohio.

THE SQUIRREL TREE-TOAD.

HYLA SQUIRELLA.

PLATE XXI. FIG. 53. — (CABINET OF THE LYCEUM.)

Hyla squirella. Bosc, Nouv. Dict. Sc. Naturelles, Vol. 29, p. 543.*Rainette squirelle*. DAUDIN, Hist. Nat. Rept. Vol. 8, p. 34, pl. 93, fig. 2.*H. squirella*. LE CONTE, Ann. Lyc. Vol. 1, p. 279. HARLAN, Med. and Phys. Res. p. 109.*H. id.* HOLBROOK, N. Am. Herpetology, Vol. 1, p. 105, pl. 18.

Characteristics. Brown or ash. A dusky band from the nostrils to the eyes. The white of the upper lip reaches almost to the insertion of the fore legs. Length one inch and a quarter.

Description. Body symmetrical, somewhat elongated. Skin smooth, or at the most with slightly elevated papillæ. Head conic. Snout acute; its sides vertical, and giving it a pyramidal form. Orbits somewhat elevated. Anterior feet short, four-toed. Hind legs long, five-toed, semi-palmate; all with rounded pellets at their extremities.

Color. Brownish or light ash above, changing to light green; blotched, and lined with dusky stripes on the surface of the body in a very irregular manner. On the anterior part, more usually abbreviated longitudinal lines, and unequal sized blotches on its posterior portions. A dusky stripe extends from the nostrils to the eyes; occasionally a large triangular dusky blotch between and behind the eyes. Thighs and legs barred with dusky. Beneath whitish.

I have met with this species in the neighborhood of New-York, and supposed it at first to be distinct from the southern *squirella*. From a careful comparison of our specimens with those in the Cabinet of the Lyceum deposited by Major Le Conte, the only observable distinction was in the smaller size of the northern animal. After a rigorous comparison, Major Le Conte decided it to be identical with the southern species. I am under obligations to him for the drawing which illustrates this pretty little tree-toad.

According to Major Le Conte, it inhabits under logs and bark of decaying trees.

While these pages are passing through the press, Dr. Holbrook is engaged in publishing a second edition of his Herpetology. He is still of the opinion that the *squirella* is exclusively a southern species.

(EXTRA-LIMITAL.)

H. femoralis. (HOLBROOK, Vol. 4, pl. 31.) Dark ash, with a few dusky blotches between the eyes; a black line from the eyes to the hind legs, and another to those in front. Length $1\frac{1}{2}$ inches. *Carolina and Georgia.*

H. delitescens. (Id. Vol. 4, pl. 32.) Ash, irregularly speckled with darker; lips whitish, speckled with brown; vent varied with cinereous. Length $1\frac{3}{4}$ inches. *Georgia and South-Carolina.*

H. viridis. (Id. Vol. 3, pl. 20; and Vol. 4, pl. 29 of 2d Ed.) Bright green, with a yellow line on each side from the snout to the posterior extremities. Length $1\frac{3}{4}$ inches. *From Lat. 30° N. to Mississippi.*

FAMILY SALAMANDRIDÆ.

Body long and slender. Feet always four. Tail long, rounded or compressed, persistent. Ribs very short. Vertebrae numerous and movable. Respiration, at first aquatic by external gills, which are never concealed in the chest; afterwards atmospheric by lungs. Tympanum concealed.

Obs. This family corresponds with the order *Urodela* of Bell. It is a very natural family, and is in this country prolific in species. We separate it into two genera.

GENUS SALAMANDRA. Brongniart, Holbrook.

Jaws with numerous small teeth, and two rows of similar teeth in the palate. Tongue short thick, enlarged above, free, attached by a very slender root in the centre. Without a third eyelid. Ribs rudimentary; no sternum. Pelvis suspended by ligaments. Tail either cylindrical or compressed towards the tip.

These are the Land Salamanders, although found occasionally in water.

THE YELLOW-BELLIED SALAMANDER.

SALAMANDRA SYMMETRICA.

PLATE XV. FIG. 33.

Salamandra stellio. Am. Jour. Sc. Vol. 1, p. 264.

S. symmetrica. HARLAN, Ac. Sc. Vol. 5, p. 158. Med. and Phys. Res. p. 98.

S. id. HOLBROOK, N. Am. Herp. Vol. 2, p. 59, pl. 11. STORER, Mass. Rep. p. 246.

Characteristics. Reddish brown above, with a series of crimson spots on the sides; beneath reddish orange. Tail longer than the body, small compressed. Length three inches.

Description. Body cylindrical, and covered with a rough cuticle. Head short, obtusely pointed. Fore feet slender, with four toes; hind legs more robust, with five toes. Tail slender, sub-cylindrical at base, then compressed, and terminating in a point.

Color. Upper part of the head, body and tail, reddish brown; this color extends over the upper part of the extremities, and surrounds the lower part of the tail. On each side of the body a series of brilliant vermillion spots, each bordered with black; these spots vary in number from three to five, and even seven have been observed on each side. Throat and abdomen orange, with minute black dots extending to the end of the tail.

Total length, 2·9.

Length of the head and body, 2·0.

Tail measured from the vent, 0·9.

The Yellow-bellied Salamander is extensively distributed throughout the Union, from Maine to Florida, and in Ohio westwardly. It is closely allied by its markings with the following species, from which it was first accurately distinguished by Dr. Harlan. It is frequently found under stones and decayed wood.

THE VIOLET-COLORED SALAMANDER.

SALAMANDRA SUBVIOLACEA.

PLATE XVI. FIG. 36. — (CABINET OF THE LYCEUM.)

Salamandra venenosa. BARTON, apud DAUD. Hist. Rept. Vol. 8, p. 229.

S. subviolacea. ID. Trans. Am. Phil. Society, Vol. 6, p. 112, pl. 4, fig. 6.

S. id. HARLAN, Acad. Nat. Sc. Vol. 5, p. 327; Med. and Phys. Res. p. 93.

S. id. HOLBROOK, N. Am. Herpetology, Vol. 3, p. 105, pl. 24. STORER, Mass. Rep. p. 247.

Characteristics. Bluish black, with round yellow spots; beneath immaculate. Tail cylindrical, compressed towards the tip. Length 6 – 7 inches.

Description. Body robust, tapering regularly to the end of the tail. Head large; snout rounded. Eyes small, but prominent. A strong cervical fold. Fore feet slender, four-toed; hind feet more robust, five-toed. Tail confounded with the body, cylindrical at base, then becomes compressed, and tapers to a point.

Color. Bluish-black or purplish, with large round subequal bright-yellow spots irregularly distributed over the upper part of the head, body and tail, and occasionally on the upper parts of the legs; these spots sometimes assume somewhat the appearance of two regular series on each side of the vertebral line. A small round spot usually over each eye. Beneath lighter, sprinkled with numerous white points extending beneath the tail.

Length 5.0 – 7.0.

This species extends along the Atlantic from Maine to Maryland, and has likewise been noticed in the western States. Of the two names proposed by the same author, we are at liberty to reject the name which conveys a false idea, and to adopt that which the author applied to his more complete and detailed description. It appears to be nocturnal, and is found under rocks, stones and decaying trees; and in spite of one of its names, is entirely harmless.

THE RED-BACKED SALAMANDER.

SALAMANDRA ERYTHRONOTA.

PLATE XVI. FIG. 38. — (STATE COLLECTION.)

Salamandra erythronota et cinerea. GREEN, Journ. Acad. Nat. Sc. Vol. 1, p. 356.*S. erythronota.* HARLAN, Med. and Phys. Researches, p. 95.*S. cinerea?* ID. ID.*S. erythronota.* HOLBROOK, N. Am. Herpetology, Vol. 3, p. 113, pl. 27.*The Red-backed Salamander.* STORER, Mass. Report, p. 245.

Characteristics. Small. A distinct vertebral stripe, varying with age from scarlet to reddish brown. Length 2 - 3 inches.

Description. Body slender, cylindrical. Tail cylindrical, tapering towards the extremity, where it becomes compressed, more particularly in the younger individuals, and pointed. Snout obtusely rounded. Eyes small, moderately prominent. Nostrils lateral, near the snout. Cervical fold indistinct. Legs feeble; the fourth toe on the fore foot rudimentary.

Color. Head above brownish; chin and throat whitish, (according to Green, with a few dots of crimson.) Sides dull white, thickly punctate with brown, and lustrous. Eyes black. A broad vertebral stripe extending from the snout (occasionally from the occiput) towards the end of the tail; this stripe is of a deep or lighter red color, varying with age. In very young individuals 0.8 long, this stripe is of a brilliant scarlet or crimson.

Total length, 3.0 - 3.5.

Prof. Green, after a careful revision and comparison of his *cinerea* and *erythronota*, came to the conclusion that the former was an aged individual of the latter, in which the dorsal stripe had become obsolete.

The Red-backed Salamander is a very numerous and widely distributed species. It is among the first which appears in the spring, and I have seen it as early as the middle of April. It runs with great rapidity among the leaves, in moist wooded districts, and conceals itself under stones and decayed trees. It has been noticed by Dr. Blanding at Camden, South Carolina, and by Mr. Say at Louisville, Kentucky. The most northerly limit of this species observed by me, was on the islands of the Saranac lake.

THE PAINTED SALAMANDER.

SALAMANDRA PICTA.

Salmandra picta. HARLAN, Journ. Acad. Nat. Sc. Vol. 5, p. 136.*S. intermixta.* GREEN, Macl. Lyceum, Vol. 1, (fide Harlan.)*S. picta.* HARLAN, Med. and Phys. Researches, p. 98 and 177. STORER, Mass. Rep. p. 251.

Characteristics. Dark slate or blackish; yellowish or orange beneath. Tail abruptly compressed towards the tip, slightly shorter than the body. Length four inches.

Description. Head large, rather flat; occiput broad, slightly protuberant; snout obtuse, rounded posteriorly; rictus of the mouth wide, extending to the eyes. A cervical fold. Legs short, strong, thick. Tail sub-quadrangular for the first two-thirds; the remaining portion abruptly compressed, pointed, with the edges carinate.

Color. Blackish, or dark slate above; inferior portion of the body obsolete punctured with dark spots, more evident on the sides. Legs externally of the color of the back.

Length, 4.5.

Inhabits shallow streams. I am indebted to Dr. Harlan for the above description. It is introduced here, as it has been seen both in Massachusetts and Pennsylvania, and of course may be presumed to inhabit this State.

THE SALMON-COLORED SALAMANDER.

SALAMANDRA SALMONEA.

PLATE XVI. FIG. 39. — (STATE COLLECTION.)

Salamandra salmonea. HOLBROOK, N. Am. Herpetology, Vol. 3, p. 101, pl. 22.

The Salmon-colored Salamander. STORER, Mass. Report, p. 248.

Characteristics. Reddish brown; sides salmon-colored. A bright salmon-colored line from the eye to the snout. Length six to seven inches.

Description, from a specimen preserved in spirits. Head flattened above, with the eyes prominent and far apart. Teeth exceedingly numerous, acute and recurved in both jaws. Tongue doubled back in the mouth, with a fold. Gular fold large, distinct. A vertebral furrow, extending from behind the eyes to a point opposite the vent. Tail compressed, distinctly carinate above, moderately so beneath.

Color, from the description given by Dr. Storer, the original describer of this species. Whole upper part of the body, head, legs and tail, yellowish brown; sides of a salmon-color. The entire surface of all the upper portion, as well as the sides, spotted with irregular greyish markings, which are more obvious on the lighter colored sides. Beneath, head and body white; light salmon-color beneath the tail. From the edge of the upper lip, just exterior to the nostrils, arises a salmon-colored line, about a fourth of a line in width, which runs back to the inner angle of the eye, and passing up over the eye, loses itself upon the middle of the back part.

Total length,	5.7.	Length of fore feet,	0.5.
Length of head and body, ..	3.4.	Ditto of the hind feet,	0.7.
Ditto of the tail,	2.3.		

This beautifully colored Salamander was obligingly communicated to me by Prof. Emmons, to whom I am under many similar obligations. All its beautiful tints disappear in spirits, when it presents the following colors: Above mottled grey and brown, the former predomi-

nating. On the flanks beneath, dull yellowish, punctate with brown. Sides of the tail similar to the dorsal surface. Chin whitish; the lower lip dotted with brown; a light colored stripe from the nostrils to each eye.

I have been particular in noting these appearances, as it may serve as a guide to closet naturalists, and exhibits the futility of creating species from cabinet specimens. I had fallen into this error myself in relation to the species under consideration; and previous to the publication of Dr. Storer's description, had entered it in my list of species as new, with an appropriate name. I am indebted to my friend Dr. Holbrook for correcting my description.

Dr. Emmons found it under a stone at Newcomb, Essex county, in this State. It has been seen in Massachusetts and Vermont.

THE BLOTCHED SALAMANDER.

SALAMANDRA FASCIATA.

PLATE XVII. FIG. 40. — (COLLECTION OF MAJOR LE CONTE.)

Salamandra fasciata. GREEN, Journ. Acad. Nat. Sciences, Vol. 1, p. 350.

S. id. HARLAN, Medical and Phys. Researches, p. 94.

S. id. HOLBROOK, N. Am. Herpet. Vol. 4, p. 103, pl. 23. STORER, Mass. Rep. p. 247.

Characteristics. Grey, with large bluish black blotches on the upper part of the body and tail; beneath deep blue. Length five inches.

Description. Body robust. Head moderately broad, short, thick and rounded. Mouth large. Eyes large and prominent. Nostrils lateral, and near the snout. Legs robust; anterior four-toed, the posterior five-toed and longer; all with separate toes. Tail shorter than the head and body, subcompressed, ending in rather an obtuse point.

Color. Grey above, with irregular transverse bluish black patches on the head and body. A large triangular spot on the head. On the tail, the patches are so arranged as to cause the tail to appear annulate with grey and black. Summit of the head ash, punctate with dusky. Irides varied with greyish. Abdomen uniform blue-black. Toes annulate with blue and grey.

Length, 5.2.

Of tail, 2.3.

I am indebted to Major Le Conte for the drawing of this remarkable species, which he had observed in the western part of this State. It has been observed from Massachusetts to Carolina. It has also been noticed in Ohio.

THE LONG-TAILED SALAMANDER.

SALAMANDRA LONGICAUDA.

PLATE XVII. FIG. 41. — (CABINET OF THE LYCEUM.)

Salamandra longicauda. GREEN, Journ. Acad. Nat. Sciences, Vol. 1, p. 351.*S. longicaudata.* HARLAN, Med. and Phys. Researches, p. 96.*S. longicauda.* HOLBROOK, N. Am. Herpetology, Vol. 3, p. 111, pl. 26.

Characteristics. Yellow; with numerous small black spots, becoming transverse bars on the tail. Tail more than twice the length of the body. Length 6 inches.

Description. Body slender, cylindrical. Head short; snout obtuse. Nostrils lateral, and near the end of the snout. Eyes small, but prominent. Palatine teeth in a diverging series. Tongue pediculated. Chin and neck smooth, with a slight gular fold. Tail compressed at the sides, slender, ending in a delicate point. Fore legs long and slender, with four slender subequal toes.

Color. The general color throughout is yellow. Head, body, chin and throat lemon-color; breast and abdomen yellowish white; under side of the fore and hind legs straw-colored. Head and body above, and on the sides, sprinkled with numerous small irregular black spots, points and dashes; these become confluent on the posterior part of the body and sides of the tail, forming vertical bars: all beneath immaculate. Pupil black; iris golden.

Length, 5.0 – 6.0.

Of the tail, 3.2 – 3.5.

The only specimen I have seen of this animal, is that in the Cabinet of the Lyceum, obtained near this city. Professor Green, its original describer, observed it near Albany. It is essentially aquatic, and is among the most beautiful of the genus. It usually affects deep caverns containing running water, and in this respect is associated in its habits with the Proteus of Carniola. It has been found at Pittsburgh, Pennsylvania, and in Ohio; but its southern limits have not been ascertained.

THE GRANULATED SALAMANDER.

SALAMANDRA GRANULATA.

PLATE XXIII. FIG. 66. — (STATE COLLECTION.)

Salamandra granulata. HOLBROOK, N. Am. Herpetology, Vol. 5.

Characteristics. Greenish slate above, varied with grey and brown beneath. Tail slightly longer than the head and body. Length 6 – 7 inches.

Description. Upper surface of the body and head as far as the eyes smooth, but under the lens, exhibiting an appearance like shagreen. Head above flattened, sub-truncate in front.

Tongue pediculate. Eyes prominent, with the upper margins of the orbits very projecting. Gular fold very distinct. Fore feet 0·5 in length, four-toed, very feeble in comparison with the hind feet, which are 0·8 in length, and furnished with five toes. Tail long and slender, very slightly compressed, and ending in a slender acute point.

Color. Above, a lustrous dark-greenish slate of a uniform hue. Chin and abdomen mottled with brown and grey. Lower surface of the tail uniform ashen grey. Gular fold soiled white. Soles of the fore and hind feet white.

Length of the head to the fold, .. 0·7. Length of the tail from the vent, . 3·6.
From the cervical fold to the vent, 2·5. Total length, 6·9.

The colors of this species must be received with some reserve, as it was derived from a specimen in spirits, sent to me by Dr. Emmons from the northern district of this State. That gentleman, however, saw it alive, and the colors were little changed. In the same vessel were specimens with a total length of 3·3, which I suppose to be younger individuals of the same species. It had the same markings, and the same granulated appearance, although not quite so obvious. The greatest observed difference was in the length and shape of the tail, which was 1·5 in length, compressed, carinate above, and pointed.

It need scarcely be added, that a more extended series of observations, and a more thorough knowledge of the changes effected by age, season and sex, are necessary before we shall be enabled to pronounce with certainty upon the specific identity of many of the animals of this genus.

This species is allied to the *subfusca* of Green; from which, however, it may be distinguished by the length of its tail, and the absence of spots on the upper part of the body. We believe, however, that *subfusca* was dropped as a species by its author. Dr. Holbrook informs me that he has observed the *granulata* in Pennsylvania.

THE STRIPED-BACK SALAMANDER.

(*SALAMANDRA BILINEATA*.)

PLATE XXIII. FIG. 67.

Salamandra bislineata. GREEN, Journ. Acad. Nat. Sciences, Vol. 1, p. 352, 1818.

S. flavissima. HARLAN, Am. Jour. 1825; Med. and Phys. Res. p. 98, 177.

S. bilineata. HOLBROOK, N. Am. Herpetology, Vol. 5.

Characteristics. Cinereous or brownish yellow; back with two or three black lines; beneath yellow. Tail longer than the head and body. Length three inches.

Description. Body slender, elongate. Head broader than the body, rather depressed; snout oval. Eyes prominent. A cervical fold. Tail tapering, compressed, pointed, longer than the head and body.

Color. Back cinereous (Green), brownish yellow (Harlan). Clear bright yellow or whitish beneath. A broad black line on each side, extending from behind the eyes to the end of the tail; a narrow vertebral black line from the occiput to the base of the tail: this third line is occasionally absent or nearly effaced. Iris yellow.

Length, 3.0.

Although this species is said to be very common, both by Green and Harlan, I have never had the good fortune to meet with it, and have consequently been compelled to use their description. It is said to be very active; found in shallow water, beneath stones in moist places, or on the borders of brooks in shady situations. Dr. Eights obtained several specimens from the *Dripping Well* near Albany, while engaged in digging up a soft bed of earth, marl and decomposed vegetable matter, which had accumulated beneath. He states that some of them were beyond the usual size, and in these the longitudinal lines could scarcely be detected.

The geographic limits of this species, thus far ascertained, extend from New-York and Pennsylvania to Ohio.

THE RED SALAMANDER.

SALAMANDRA RUBRA.

PLATE XVII. FIG. 43. — (STATE COLLECTION.)

Salamandra rubra. DAUDIN, Hist. Rept. Vol. 8, p. 227, pl. 97, fig. 2.

S. maculata et rubriventris. GREEN, Journ. Acad. Nat. Sc. Vol. 1, p. 350 and 353.

S. maculata et rubriventris, var? HARLAN, Med. and Phys. Researches, p. 96 and 97.

S. maculata. Brown Spotted Salamander. STORER, Mass. Rep. p. 253.

S. rubra. HOLBROOK, N. Am. Herpetology, Vol. 4.

Characteristics. Red, (in cabinets dull salmon,) with numerous black dots. Tail nearly as long as the body, 4 – 6 inches.

Description. Body robust, cylindrical, smooth, slimy. Head moderate, flattened above; snout rounded. Nostrils small, anterior. Tongue pediculate. Teeth diverging on the palatines. Fore legs moderately robust, with four small subequal toes; hind legs very stout, with five toes, the interior shortest. Tail continuous with the body, rapidly diminishing towards the acute tip, and compressed on the sides; a prominent ridge on the upper edge, which may be traced more or less distinctly to a point vertical to the vent.

Color. In cabinet specimens, light brownish or dusky yellowish, sprinkled on the head, body and extremities, with reddish brown spots. In the living specimens, the general color above and beneath is red, more or less vivid, and the roundish spots are black; these spots are usually larger and more crowded on the summit of the head and along the dorsal line, smaller and more scattered on the sides of the body and tail. Beneath almost immaculate, except under the throat and breast.

Length, 3.0 – 5.0.

Tail, 1.3 – 2.2.

This is one of our commonest species, and is usually found under stones in shallow streams. If this be indeed the *S. rubra* of Daudin, as Holbrook maintains, I must suppose the "bande longitudinale assez large, noirâtre et comme brûlée," on the under side of the body, to have been accidental, as I have never seen it in the many individuals which I have examined.

THE SCARLET SALAMANDER.

S. COCCINEA.

PLATE XXI. FIG. 54. B. — (STATE COLLECTION.)

Characteristics. Scarlet, with two or more ocellate spots on the sides. Length 2 – 6 inches.

Description. Body cylindrical, smooth. Tail rounded, tapering, and, measured from the vent, equalling the head and body in length.

Color. Bright scarlet, passing insensibly into bright orange red beneath. Three inequidistant rounded vermilion spots, margined with black, on each side of the dorsal ridge. Eyes black, with a metallic golden margin under the superciliary ridge. A dark longitudinal abbreviated stripe passes through the eye.

Length of the head and body,..... 1.9.

Ditto of the tail,..... 1.9.

This is a species which appears to dwell almost constantly on land. It was first seen by me near Lake Pleasant, Hamilton county, in a forest, just after a shower. Mr. I. Cozzens states that he has observed this species on Anthony's Nose; and Major Le Conte informs me that he has seen it from four to six inches long, under stones in Chenango county. Its brilliant coloring, however carefully kept, disappears, and fades into a uniform dark olive-brown; the spots remaining unchanged, unless kept for a long time in alcohol.

THE BLUE-SPOTTED SALAMANDER.

SALAMANDRA GLUTINOSA.

PLATE XVII. FIG. 42. — (STATE COLLECTION.)

Salamandra glutinosa. GREEN, Journ. Acad. Sciences, Vol. 1, p. 357.

S. variolata. GILLIAMS, Ac. Sc. Vol. 1, p. 480, pl. 18, fig. 1.

S. cylindracea. HARLAN, Med. and Phys. Researches, p. 94.

S. glutinosa. STORER, Mass. Report, p. 253. KIRTLAND, Zoology of Ohio, p. 168.

Characteristics. Small, smooth, polished. Bluish black, with small irregular bluish white spots. Length 4 – 6 inches.

Description. Snout blunt and rounded. Gular fold distinct. Nostrils small, nearer the snout than to the eyes. Eyes large, prominent and distant. Fore legs 0.38 long, slender, four-toed; the two middle ones longest, subequal. Hind feet more robust, 0.4 long, five-toed. Tail plump and rounded when alive, and continuous with the body, tapering to a blunt point. In spirits, the tail appears compressed, ancipital.

Color. Above, polished, plumbaginous; towards the end of the snout, marbled with ash. Neck and body sprinkled with numerous irregular minute transparent bluish spots, and a series of rather larger ones along the body; in spirits, these become ash-colored. Upper edge of the tail with a similar series of large transparent bluish spots, extending sometimes to its extremity. Head and body beneath paler. Axilla of the anterior extremities whitish. Toes annulate with dusky and pale flesh-color.

Length,	1.80.
Of tail,	0.75.
Of body from the vent,	0.80.

The specimens from which the above description was drawn, were procured by Mr. I. Cozens from dry elevated grounds near this city. It is to be observed that this species, which when alive had a rounded cylindrical and tapering tail, in spirits the same part became compressed and edged above and beneath. This should lead to great caution in receiving descriptions of species of this family, drawn up from cabinet specimens.

The Blue-spotted Salamander appears to be allied in a measure to the *nigra*, as far as we judge by the brief description of Green. I am inclined to suspect *S. jeffersoni* of the same author to be a variety of this species. It sometimes is found six inches long. It has been observed from Massachusetts to Pennsylvania, and also in Ohio.

(EXTRA-LIMITAL.)

S. cirrigera. (HOLBROOK, N. Am. Herp. Vol. 5, plate.) Yellow speckled with white; two short fleshy cirri above the upper lip; a black line on each side, edged with white. Length three inches.

Louisiana. An Var. *S. bilineata*?

S. sinciput-albida. (GREEN, Ac. Sc. Vol. 1, p. 352.) Above dusky ferruginous; beneath yellowish; nose white. Tail short, thick, tapering, shorter than the body. Length three inches. *New-Jersey.*

S. fusca. (ID. Ib.) Yellowish brown; beneath white, with a line on each side of black spots. Tail slightly compressed, as long as the body. Length three inches. *New-Jersey.*

S. guttolineata. (HOLBROOK, Herp. Vol. 2, pl. 12; and Vol. 5, 2d Ed.) Straw-colored, with a vertebral line of black bifurcating behind the occiput; a lateral black band, in which is a row of white spots, and beneath this a white line. Length six or seven inches. *Carolina.*

S. auriculata. (ID. Ib. Vol. 3, pl. 28; and Vol. 5, 2d Ed.) Dusky brown; greyish with minute spots beneath, and a series of small reddish brown spots on each side; a reddish brown spot behind the place of the ear. Length five inches. *Georgia.*

- S. talpoidea.* (Id. Ib. Vol. 5.) Uniform dusky throughout; body short and thick; head large, with a contracted neck. Tail continuous, compressed towards the tip. Length three inches. *Sea islands, S. C.*
- S. quadrimaculata.* (Id. Ib. Vol. 5, plate.) Head rather large; snout rounded. Body elongated, stout, dusky above, tinged with purple, and with two series of elongated subquadrate red spots. Tail of a similar color, with a red central line. Length three and a half inches. *Pennsylvania to Georgia.*
- S. haldemani.* (Id. Ib. Vol. 5.) Head flattened above; snout rounded. Body and tail pale yellow above, slightly olive at the flanks, marked with dusky spots and blotches disposed in three irregular longitudinal series. Length four inches. *Pennsylvania to Virginia.*

GENUS TRITON. *Laurenti, Holbrook partim.*

Tongue fish-like, attached more or less at its borders, only free at its anterior extremity. Tail compressed. Length various.

Obs. This genus is composed strictly of aquatic species; occasionally, however, they are found on land.

THE TIGER TRITON.

(TRITON TIGRINUS.)

PLATE XV. FIG. 32—(STATE COLLECTION.)

- Salamandra tigrina.* GREEN, Jour. Acad. Nat. Sc. Vol. 5, p. 116.
S. id. HARLAN, Med. and Phys. Researches, p. 93.
S. id. HOLBROOK, N. Am. Herpetology, Vol. 3, p. 109, pl. 25.

Characteristics. Bluish black, with numerous irregular yellowish blotches over the head, body, tail and extremities. Tail compressed from its origin. Length six inches.

Description. Body robust, cylindrical, smooth. Head broad and rounded. Nostrils small, lateral. Eyes large and prominent. Mouth wide. Neck contracted with a fold. Fore feet short, with four toes. Tail longer than the body, and compressed to a very thin edge above and beneath. Beneath granulate.

Color. Above bluish black; in a modified light, lustrous. The spots on the upper surface pale ochre or lemon yellow, rounded or oblong; their general direction is vertical to the axis of the body. Chin dusky yellow. Abdomen greyish, with dull yellow blotches. Pupil black; irides brown and yellow. Tail unspotted beneath.

Length, 6.0 – 7.0.

I am unacquainted with the habits of this species, except that it is occasionally found in decayed hollow trees. Those which I obtained, were from the vicinity of Oneida lake. It resembles, in some respects, the *S. subviolacea*; but a slight attention to its characters will show it to be specifically distinct.

THE CRIMSON-SPOTTED TRITON.

TRITON MILLEPUNCTATUS.

PLATE XV. FIG. 34. — (STATE COLLECTION.)

Salamandra dorsalis. HARLAN, Jour. Acad. Nat. Sc. Vol. 6, p. 101; Med. and Phys. Res. p. 99.*S.* *id.* HOLBROOK, N. Am. Herpetology, Vol. 2, p. 57, pl. 10.*S. millepunctata*. *Many-spotted Salamander*. STORER, Mass. Report, p. 249.

Characteristics. Olive, with crimson spots; the two colors above and beneath distinctly separated. Tail compressed, tapering. Length 3 – 4 inches.

Description. Body cylindrical, granulated as in the preceding. Tail much compressed, its edges almost membranaceous, longer than the body. Fore feet long and slender, with four toes, one rudimentary. Hind feet more robust; outer toes small.

Color. Above, olive brown, varying in hue from light brown to deep olive green. On the flanks, sometimes on the sides of the throat, and occasionally for some distance along the sides of the tail, with a row of crimson circular spots bordered with black; these spots vary in number from two to ten, at least this is the greatest number that has fallen under my notice. Beneath yellowish, punctured with black, and separated distinctly from the brown of the parts above; the punctures extend over the belly, inside of the legs, and upper parts of the body and tail. In long preserved cabinet specimens, the line of separation between the colors above and beneath become effaced, and the crimson spots change to white.

Length, 3·0 – 4·0.

This species had originally the misfortune to be so badly named, and the description, which was taken from a changed cabinet specimen, gave such an imperfect and false idea of the animal, that we have adopted the name originally applied by Dr. Storer, both as more descriptive in itself, and as being the first true description of the species. We presume this to be a case where the law of priority can have no force, and where the original describer we imagine would cheerfully agree to the change. In some parts of the State it is called *Evet*, which name is also applied to several other species, and is evidently a corruption of *eft*.

I have met with this animal in brooks, and in every part of the State. It is capable of withstanding a low temperature, for Holbrook saw them swimming about with great vivacity under ice an inch thick. It feeds on insects, and, according to Dr. Storer, casts its skin in June.

THE DUSKY TRITON.

TRITON NIGER.

PLATE XV. FIG. 35. — (STATE COLLECTION.)

Salamandra niger. GREEN, Jour. Acad. Nat. Sc. Vol. 1, p. 352.*S. id.* HARLAN, Med. and Phys. Res. p. 97. EIGHTS, Zodiac, Albany, 1835.*Triton niger.* HOLBROOK, N. Am. Herpetology, Vol. 5, plate.

Characteristics. Back black; sides with small white spots. Tail compressed, as long as the body. Length 4 – 6 inches.

Description. Body smooth, tapering. Head large, broadly rounded in front. Eyes approximated, prominent. Two or three series of mucous pores between the eyes and nostrils. A moderate fold under the neck. Toes unusually long. Tail sub-cylindrical at its origin, becoming gradually compressed, and tapering to a point, with moderately acute edges. Tongue with numerous papillæ.

Color. Uniform dark brown or black; somewhat whiter beneath, especially on the lower edge of the tail. Three or four obsolete whitish dots on the chin.

Length,	5.0 – 6.0.	Fore legs,	8.80.
Head and body,	3.0.	Hind legs,	1.10.
Tail,	2.8.	Longest toe of the hind foot, ..	0.45.

Dr. Eights observed many of this species, “in wet springy places near running streams,” in the neighborhood of Albany. Prof. Green assigns shallow waters as their usual habitat. The young are yellowish brown, especially along the back. This was noticed by Dr. Eights, who observed them “to vary from the original description, being as universally yellowish “brown as black.” I am indebted to Prof. Emmons for specimens from Peru, Clinton county.

THE GREY-SPOTTED TRITON.

TRITON PORPHYRITICUS.

PLATE XVI. FIG. 37. — (STATE COLLECTION.)

Salamandra porphyritica. GREEN, Maclurian Lyceum, Vol. 1, p. 3, pl. 1.*S. id.* HARLAN, Med. and Phys. Researches, p. 98.

Characteristics. Glossy black, slimy, with minute irregular greyish spots. Length seven inches.

Description. Body smooth, robust, and tapering insensibly to the extremity of the tail; covered with a viscid secretion. Head ovate, depressed. Rictus wide. Eyes very prominent, and black. Anterior feet four-toed, half the size of the hind feet, which are furnished with five. Tail cylindrical, scarcely compressed.

Color. Shining black above, with numerous minute irregular grey or pale-ash spots distributed over the head, back and tail; the spots on the flanks are larger, and inclined to brownish. Belly uniform plumbeous; inferior and posterior portions of the tail rather lighter.

Total length,..... 7.0.

Of tail, 4.0.

This large Triton, which in its form resembles the last described species, was captured by Mr. I. Cozzens in the neighborhood of New-York. I had referred it originally to the *glutinosa* of Green; from which, however, it is obviously distinct by its shorter tail. The brief notice of *porphyritica* is very unsatisfactory; but I prefer placing it provisionally under that name, rather than to introduce a new nominal species. The *suprafusca* of Green may have been derived from a cabinet specimen.

The Grey-spotted Triton conceals itself under rocks and stones in moist places, and is exceedingly active in its movements.

(EXTRA-LIMITAL.)

T. ingens. (GREEN. Ac. Sc. Vol. 6, p. 256. HOLBROOK, Herp. Vol. 5.) Ferruginous throughout, with dark bluish blotches. Tail compressed, and more than half the total length. Edge of the external toes of the hind legs fimbriated. Total length eleven inches. *New-Orleans.*

T. jeffersoni. (GREEN, Mac. Lyc.) Light brown, sprinkled with azure blue points. Tail sub-compressed, as long as the body. Length seven inches. *Pennsylvania.*

FAMILY SIRENIDÆ.

Body elongate, formed for swimming. Feet either four, or two anterior only. Tail compressed, persistent. Respiration aquatic by gills throughout life, coëxistent with rudimentary lungs. Gills external, persistent. Eyes with palpebræ.

This group corresponds with the order *Amphipneusta* of Bell, and the sub-class *Diplopneumena* of Hogg. It comprises the genera *Siredon*, *Siren* and *Menobranhus*; of the latter genus, we have a representative in this State.

GENUS MENOBRANCHUS. Harlan.

Head large, flattened, truncate. Two rows of small conical teeth in the upper jaw; one row beneath. Four feet, with four free toes on each.

Although the type of this genus has received a variety of names, yet we are indebted to Dr. Harlan for the first clear and distinct account founded on its anatomical characters. It has been vaguely called *Salamandra*, *Triton*, *Proteus* and *Necturus*, without sufficiently eliminating or restricting its characters. The name proposed by Harlan must therefore be considered as firmly established.

THE BANDED PROTEUS.

MENOBRANCHUS LATERALIS.

PLATE XVIII. FIG. 45. — (STATE COLLECTION.)

Triton lateralis. SAY, Long's Expedition, Vol. 1, p. 5.*Proteus of the Lakes*. MITCHILL, Sill. Jour. Sc. Vol. 4, p. 181; and Vol. 7, p. 62, pl. 2.*Menobranchnus lateralis*. HARLAN, Ann. Lyc. Nat. Hist. N. Y. Vol. 1, p. 233, pl. 16; Med. and Phys. Res. p. 89 and 165.

CUVIER, Règne Animal, Griffith's transl. Vol. 9, p. 412 and 475, pl. copied.

Proteus lateralis. BARNES, Am. Journ. Sc. Vol. 11, p. 285.*P. maculatus*. ID. IB. Vol. 13, p. 68.*M. lateralis*. HOLBROOK, N. Am. Herpetology, Vol. 3, p. 119, pl. 30.

Characteristics. Brownish, with blackish spots; often a dark lateral line. Length one to two feet.

Description. Body robust, cylindrical, smooth. Head broad, depressed and attenuated in front, where it is truncate and slightly emarginate. Eyes small. Nostrils very minute, and placed in the margin of the upper lip. Jaws covered with loose fleshy lips. Teeth minute, conic, obtuse and separated; two series in the upper jaw, and one in the lower jaw. Tongue broad, and free near the tip. Gills, three on each side, ramified and fringed, with two branchial apertures. Throat with a fold of skin beneath. Anterior extremities slender, placed near the gills, and with four clawless toes. Hind legs similar, and with four similar toes. Vent a longitudinal fissure. Tail robust, compressed, lanceolate, ancipital.

Color, of the body and tail dull brownish, spotted with black or blackish brown; on the back these are rounded, but on the sides of the body and tail become indistinct brownish blotches. Beneath lighter. Frequently a dark stripe from the nostrils through the eyes, and becoming effaced behind. Gills blood-red.

Length, 12·0 – 24·0.

This curious and interesting aquatic animal is common in the northern and western parts of the State. It is found in Lake Champlain, and is particularly abundant at the falls of Onion river and at the outlet of Lake George. It inhabits Lake Erie, Seneca and the other lakes in the western districts of New-York. It has been found in the Erie canal, and will doubtless ere long be found to have reached the Hudson river. It occurs in all the streams in Ohio emptying into Lake Erie, and sometimes in the tributaries of the Ohio. Their movements in the water are usually slow; but from their broad and powerful tail, they must occasionally move with great celerity. They are said to come occasionally on land. It is often taken with the hook, and frequently speared.

The *Menobranchnus*, or *Big Water-lizard* as it is occasionally called in this State, feeds on fluviatile shells, crustacea, and the smaller fishes. Its flesh is white, and doubtless very savory, but is never eaten by the ignorant fishermen, who regard them with great disgust and detestation. A closely allied animal, the *Axolotl* of Mexico (*Siredon pisciformis*), is considered a great delicacy; and indeed almost the whole class of reptiles and amphibia furnishes a delicate and savory food.

(EXTRA-LIMITAL.)

Genus SIREN, *Linneus, Auct.* Body eel-shaped. Two anterior legs. Teeth in the palate and jaws.

OBS. The two last species of this genus have been arranged by some authors under the genus *Pseudobranchus*.

S. lacertina. Black above; dusky beneath. Toes four. Length two to three feet. *South Carolina, Florida.*

S. intermedia. (LE CONTE, *Ann. Lyc.* Vol. 2, pl. 1.) Similar to the preceding, but smaller. Gills included in a fleshy trilobate covering. Length, one foot.

S. striata. (Id. *Ib.* Vol. 1, pl. 4.) Dusky, with two longitudinal stripes on each side. Gills as in the preceding. Length, seven to nine inches.

FAMILY AMPHIUMIDÆ.

Body long, formed for swimming. Feet four. Cranium solid. Tail compressed. Respiration by means of lungs only. No gills, but only cervical orifices. No metamorphosis known.

This family is equivalent to the order *Abranchia* of Bell, and to the families *Menopomatida* and *Amphiumidæ* of Hogg and Bonaparte.

(EXTRA-LIMITAL.)

Genus AMPHIUMA, *Garden, Harlan.* Body eel-shaped. Head and neck continuous. Legs feeble, rudimentary, with two or three jointless toes. No ribs. Two rows of teeth in the upper, and one in the lower jaw.

A. means. (HARLAN, *Ann. Lyc.* Vol. 1, pl. 22.) Dark brown. Feet bifid at the extremities. Length one to three feet. *South Carolina to Mexico.*

A. tridactylum. (CUVIER, *Tr. Acad. Sc.* 1826, pl.) Similar to the preceding. Feet trifid. *Alabama, Arkansas.*

GENUS MENOPOMA. *Harlan.*

Body robust. Head distinct from the neck. Tail broad, compressed. Lower jaw with a single row of teeth; upper jaw with an additional row. Ribs rudimentary. Legs stout, with four toes before and five behind.

OBS. This genus was first distinctly established by Dr. Harlan, under the name of *Abranchus*, which having been discovered to be preoccupied, he changed it to *Menopoma*. Others have proposed new names either erroneous in themselves, or unaccompanied with descriptions. Such are those proposed, but not defined by Prof. Barton, under the names of *Salamandra horrida*, *gigantea*, *maxima*, and *Protonopsis horrida*.

THE ALLEGANY HELL-BENDER.

MENOPOMA ALLEGHANIENSIS.

PLATE XVIII. FIG. 44.—(CABINET OF THE LYCEUM.)

- Salamandra alleghaniensis*, Sonnini. LATREILLE, Hist. Nat. Rept. Vol. 2, p. 253, fig. 1.
Le Salamandre des Monts Allégnies. DAUD. Hist. Nat. Rept. Vol. 8, p. 231.
Abranchus alleghaniensis. HARLAN, Ann. Lyc. Vol. 1, p. 233, pl. 17 and 18.
Menopoma. ID. Ib. p. 270.
Menopoma alleghaniensis. BARNES, Am. Journ. Science and Arts, Vol. 11, p. 278.
M. id. HARLAN, Med. and Phys. Res. p. 87 and 174. Griffith's Cuvier, Vol. 9, p. 410, 475, plate.
Molge. MERREM.
Cryptobranchus. LEUKARD & FITZINGER.
Young Alligator. KIRTLAND, Zool. Ohio, p. 190.

Characteristics. Slate-colored, mottled with dusky. Head broad. Tail nearly as long as the body. A dark line through the eye. Two outer toes of the hind feet palmate. Length one to two feet.

Description. Body robust, cylindrical, smooth. Tail vertically compressed, and nearly as long as the body. Vent a small longitudinal slit. Head wide, depressed, especially towards the snout, which is obtusely rounded. Nostrils prominent. Eyes small. Legs robust, short; the fore legs with four free subequal toes. Hind feet with five toes, the two outer palmate; the outer edge of the outer toe with a broad membrane to assist in swimming. Tail much compressed, obtusely pointed, membranous on its upper edge, which extends some distance along the back. The cervical aperture covered with a simple fold. Lungs vesicular, elastic, vascular as in the tortoise. Vertebrae nineteen. Tongue free in front.

Color. Dark slate or greyish with darker spots. A dusky abbreviated line passes through the eyes.

Length 12·0 – 24·0.

I have never met with this animal myself in this State; but Prof. Hall assures me that he has seen it in the Allegany river, one of the tributaries of the Ohio, within the limits of this State. It feeds on worms, crayfish, fishes and aquatic reptiles. It is said to be extremely voracious. Dr. Kirtland states, that in the State of Ohio, it occurs in all the tributaries of the Ohio, but not in those of Lake Erie.

THE ALLIGATOR HILLBIE

Measurements.

Length 12 6 - 21 6.

Head 3 6 - 4 6.

Snout 2 6 - 3 6.

Eye 1 6 - 2 6.

Ear 1 6 - 2 6.

Throat 1 6 - 2 6.

Back 1 6 - 2 6.

Ventrals 1 6 - 2 6.

Tail 1 6 - 2 6.

Color. Dark slate or grayish with darker spots. A dusky abdominal line passes through

the eyes.

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